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Tax reform and revenue productivity in Ghana

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Abstract

This study evaluates the revenue productivity of Ghana's overall tax system and of individual taxes on the basis of estimates of tax buoyancies and elasticities. It also looks at the links between the tax reform of 1983-1993 and revenue performance, as well as at ways of mobilizing additional revenue. The analysis shows that the tax reform has had significant impact on the productivity of both the individual taxes and the overall tax system. All the individual taxes, except for cocoa export tax and excise duties, showed buoyancies and elasticities of more than unity during the reform period, thereby causing the overall tax system to have a buoyancy and elasticity of more than unity each. The sharp improvement in the revenue productivity during the reform period was due principally to the successive devaluations of the exchange rate. It was also supported by the large inflow of foreign loans, the abolition of the price control and import licensing system, the simplification of the import tariff rates, and the complete overhaul of the tax administration. The tax reform succeeded in improving revenue generation, enhancing the efficiency of the tax administration and improving equity in the tax system. It also removed market distortions and strengthened economic incentives. Despite this, the share of government revenue in GDP remains low compared with the average obtained in developing countries, which calls for ways to mobilize additional revenue. Various revenue enhancement options were found to be available for use by the tax authorities. These options include the introduction of VAT to replace the existing sales tax, revaluation of properties to broaden the base of property tax, a review of the definition of income for the purposes of income tax, and further improvement in the tax administration to increase tax collection and to combat evasion and fraud.

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I. Introduction

Economic growth increases the taxable capacity of a country and enables a larger share of the private sector's resources to be ceded to the government as taxes to provide public goods and services. Many countries, therefore, depend mainly on taxation as a means of generating the required resources to meet their expenditure requirements. These countries will likely find themselves in growing fiscal imbalance when their revenue productivity falls below their expenditures. The need for fiscal adjustment then becomes particularly necessary to restore balance in the government budget.

The efficacy of fiscal adjustment to accomplish fiscal obligations depends on the tax base or capacity relative to the expenditure requirements of the public sector. This fiscal position defining the ratio of capacity to requirements approximates the marginal benefits of public expenditures vis-a-vis marginal sacrifice of the citizenry. The higher the fiscal performance, with tax efforts yielding high service returns, the nearer the budget moves towards a balance. To achieve high fiscal performance, however, the various facets of revenue and expenditure estimates must be meticulously systematized and minutely analysed within the general macroeconomic framework. Hence budgets that produce good results tend to analyse prevailing economic circumstances, both internally and externally, and take into account the macroeconomic projections of economic growth rate, money supply behaviour, inflationary pressures, employment levels and balance of payments positions. Without proper analysis and adequate harmony, the formulation of revenue and expenditure policies that would produce high fiscal performance will not be achieved.

The Ghanaian experience with fiscal performance in the 1970–1982 period was very disappointing. During this period, macroeconomic analyses and projections were not exhaustively undertaken to provide a base for effective and consistent fiscal policy formulation. Instead, fiscal policy measures were taken on an ad hoc basis, uncoordinated, and haphazardly implemented, leading to a severe deterioration in the country's public finances. A rapid growth in government expenditure accompanied by a relatively low growth in revenue resulted in persistent budgetary deficits financed mainly by the banking system. Consequently, the money supply rose sharply, causing rapid growth in the inflation rate and an increasingly over-valued exchange rate. Attempts to suppress the inflationary spiral through official control of domestic prices added a further setback to the government's economic policy. The price control system, together with the over-valued exchange rate, created severe distortions in the economy (World Bank, 1984). These in turn destroyed incentives for production and exports and encouraged speculation and

smuggling. They also expanded the parallel market activities where large private “rents” were reaped at the expense of social benefits to the national economy.

The World Bank (1984) also found that economic activity shifted from the monetary to the subsistence sector, indicating a withdrawal from the monetized economy by some people and a collapse of the organized markets. These developments led to a sharp contraction in the tax base and consequently in the ability of the government to mobilize enough revenue to meet its expenditure requirements. Attempts to increase the tax revenue without rationalizing the structure of the tax system led to high marginal rates on a shrinking base. The result was a further deterioration in economic incentives and a massive shift of economic activities to the parallel markets and expansion of unrecorded cross-border trade.

In response to the decline of the economy, the Government of Ghana (GOG) initiated a comprehensive programme of stabilization and structural adjustment in 1983, aimed at laying the foundations for sustained economic growth and the achievement of external payments viability. A key element of the programme was the restoration of fiscal discipline and pursuit of a growth-oriented fiscal strategy. The fiscal adjustment involved not only a determined effort at expenditure control to reduce budget deficits but also an increase in domestic resource mobilization through a comprehensive reform in the system of taxation.

In reducing the fiscal deficit as part of a structural adjustment programme, it is important to be able to project what additional revenue can be mobilized within the existing tax system as the economy grows. This requires an analysis of the revenue sources and their responsiveness to GDP growth. Such an analysis will permit the identification of the sources of fast revenue growth or, conversely, the causes of lagging revenue growth, thereby suggesting measures to adopt to maximize revenue within the existing tax system and/or the need to activate additional means of revenue generation. Knowledge of the responsiveness of tax revenue to economic growth is thus of crucial importance for economic planning purposes since budgetary deficits financed through monetary expansion generally create inflationary problems.

This study focuses on the revenue-generating implications of the tax reform initiated in Ghana in 1983. The specific objectives are twofold. First, the study seeks to evaluate the revenue productivity of the overall tax system and of individual taxes on the basis of estimates of tax elasticities and buoyancies. Second, the study attempts to explain the links of the tax reform measures to revenue performance and assesses ways of mobilizing additional revenue.

II. Tax reform: Some theoretical issues, experience and lessons

Optimal taxation and reform

The theories of optimal taxation are analogous to the examination of the principles of taxation, where lump-sum taxes are impossible. The analysis of optimal commodity taxation began with Ramsey (1927), but the subject expanded in the 1970s, following the Diamond-Mirrlees papers of 1971. The subject of optimal income taxation was created by Mirrlees (1971).

The general principles of optimal taxation can be summarized as follows: (1) tax revenue is raised most efficiently by taxing goods or factors with inelastic demand or supply (this abstracts from distributional questions where inelasticity refers to compensated demands and supplies); and (2) taxation concerned with distribution and with externalities or market failures should as much as possible go to the root of the problem. Thus for distribution, one should look for the sources of inequality (for example, land endowments or earned incomes) and should concentrate taxation there. In the case of externalities, one should attempt to tax or to subsidize directly the good or activity that produces the externality (Stern, 1988a).

As can be seen, the optimal tax theory draws a sharp distinction between cases in which it is desirable to promote efficiency (because to do so does not compromise the prospect of equity) and cases in which efficiency must be sacrificed in the pursuit of equity. Trade taxes and taxes on intermediate goods that introduce inefficiencies into production, for example, will be undesirable unless they provide additional leverage over the distribution of welfare, which they will not, provided that production is competitive and consumers can be taxed on their consumption. These efficiency results only require social welfare to be an increasing function of the individual welfare. In cases where equity and efficiency must be balanced, as in the design of direct and indirect taxes on consumers, the tax rates will depend on the exact form of the social welfare function (Newbery, 1988).

The optimal model developed for modern tax analysis appears to be quite inappropriate for most developing countries. First, the model is perfectly competitive and, in the absence of distortionary taxes, would yield an efficient equilibrium. The problem here is that governments are concerned with the issue of raising revenue and improving the distribution of income but do not have enough information about the preferences and endowments of their citizens to do so by means of lump-sum taxes. Even if governments are successful in eliminating market failures in production and in ensuring competitive behaviour and

hence production efficiency, they would be faced with an inevitable conflict between equity and efficiency in allocating output among consumers. Governments can, therefore, make redistributive taxes depend only on information revealed by consumers in the course of choosing their hours of work, their occupation, and their income and consumption pattern. When taxes paid are made to depend on these behavioural responses, they influence and distort the responses with some loss in efficiency. Taxes may also depend on family size, age and possibly disabilities, which may in large part be unalterable characteristics. In effect, governments can achieve their aim by using taxes that give rise to distortions (Newbery, 1988). Second, in the optimal model, the only constraint limiting the choice of the tax system is information about preferences and endowments, whereas in developing countries institutional, political, administrative, structural and cultural constraints may drastically limit the range of tax instruments that are effectively available.

By “tax reform” we mean a movement away from some given status quo. According to the general theory of tax reform, it will be beneficial to switch taxation at the margin from i to j , if the marginal cost of tax i exceeds that of tax j . More generally, a tax reform is beneficial if it increases both revenue and social welfare. In relation to shadow prices, a tax should be increased if the direct impact on households of making the change exceeds the cost at shadow prices of the extra demand generated. The shadow price of a good embodies the welfare consequences of the general equilibrium adjustments that flow from an extra demand for that good. Thus the shadow price depends on the way in which the economy adjusts (Stein, 1988b).

Newbery and Stein (1988) have analysed tax reform in a normative framework provided by the theory of optimal taxation. The analysis attempts to account for the impact of tax reform on tax-induced losses in the efficiency of resource allocation and on vertical equity norms. The former dimension of the reform is captured by the responsiveness of taxpayers to tax-induced relative price changes, and the latter on the particular specifications of a social welfare function. Optimal tax reforms in this context tend to be those that minimize efficiency costs (excess burden) of taxation and pay attention to income inequality. An interesting feature of these reforms is that they seldom endorse a uniform pattern of tax rates. The Ramsey rule, for example, calls for a highly differentiated structure of taxation by varying the tax rate inversely with the elasticity of demand and supply.

Although the reforms suggested by optimal taxation are based upon rigorous economic theory, as Thirsk (1995), Deaton (1988) and McLure (1989) have emphasized, putting them into operation leads to an intractably large number of rates, which would be difficult to calculate and infeasible to administer effectively. Slemrod (1990) has argued that the optimal tax theory can serve as a guide to designing “optimal tax systems”, only if one considers the technology of tax collection, i.e., the feasibility of tax instruments, the cost of administration and compliance.

Despite the flirtation with the undeniable logic of optimal tax theory, many recent tax reforms have focused on achieving broader based taxation at more uniform rates. Unlike the earlier pleas for broader based taxation, which called for greater progressivity, the current appeals are for lower marginal tax rates and reductions in the level of tax-induced distortions that are prompted by high rates (Thirsk, 1995). In this manner, the lessons of

optimal tax theory have infused recent tax reform efforts with a new respect for economic efficiency.

Experience with tax reform

Recent experience with growth-oriented adjustment programmes in developing countries indicates that tax reform is an essential component of any comprehensive strategy for structural adjustment and resumption of growth (see Chhibber and Khalilzadeh-Shirazi, 1988). As Musgrave (1988) has pointed out, however, tax reform in developing countries involves broad issues of economic policy as well as specific problems of tax structure design and administration. First, there are the central problems of revenue requirements and how to fit the revenue structure into development policy. This area of concern includes the impact of alternative taxes on saving and investment and their implications for the macro balance (domestic and foreign) of the economy. Second, there is the important goal of securing a fair distribution of the tax burden. Among the more specific tax issues, attention needs to be given to the composition of the tax structure as well as to the design of its major components. The problem throughout is not simply to determine what would be desirable but also to assess what is administratively practicable and within the ballpark of political feasibility.

A common feature of the tax structures in most developing countries is that they are complex (difficult to administer and comply with), inelastic (nonresponsive to growth and discretionary policy measures), inefficient (raise little revenue but introduce serious economic distortions), inequitable (treat individuals and businesses in similar circumstances differently), and unfair (tax administration and enforcement are selective and skewed in favour of those with the resources to defeat the system). There is a heavy reliance on taxes on international trade, which undermines long-term international competitiveness. User charges and taxes on income and property contribute only a small proportion of total revenues. Agricultural income, fringe benefits and, in some countries, public sector wages are not taxed. Taxes on wealth, bequests, land and property exist in theory but have been rendered ineffective by design problems or the lack of interest in administration, or both, while personal and corporate income taxes are levied on narrow bases at high rates. Sales taxes are levied in a cascading manner, thereby imposing tax pyramiding and, in some cases, more than 100% full forward shifting (Khalilzadeh-Shirazi and Shah, 1995; Bird, 1995; Shalizi and Squire, 1988).

Faced with mounting budget deficits and having to cut expenditures as far as is prudently possible, particularly on public investment and social spending, a number of developing countries have undertaken to restructure their system of taxation to seek higher revenue or improve the revenue elasticity and buoyancy of the tax system. Other goals of these reform processes have been to eliminate the disincentive effects of the levels of taxation; to reduce the economic inefficiencies induced by the distortionary taxation of assets and sectors; to protect the poorest of the poor from the tax net; and to provide partial relief from the unwelcome effects of inflation (Khalilzadeh-Shirazi and

Shah, 1995). Thus revenue enhancement, economic efficiency, horizontal equity and simplicity issues have dominated the world agenda on tax reform.

In pursuit of revenue enhancement, many countries are relying less on narrowly based trade taxes and are emphasizing consumption taxes. To reduce the disincentive effects of taxation, some countries have brought down the average and marginal effective tax rates by eliminating ineffective tax preferences and thereby broadening the bases, while levelling the rates. These measures, however, compromise vertical equity. As Musgrave (1995) points out, broadening the bases may raise the threshold of taxation and have fewer and lower tax rates, but it does not pay adequate attention to the distribution of relative tax burdens across income groups. Some countries have attempted to protect the poor by exempting or zero rating foods under a value added tax (VAT) and by raising the threshold of taxes on personal income, urban property and agricultural land.

Despite the wave of tax reforms over the globe, and the remarkable similarity in the broad directions of the reforms, a number of unresolved and controversial issues remain. For example, vertical equity and international income taxation have received only scanty attention in many tax reforms. Emphasis on redistributive role of the tax system is gradually waning - a direct consequence of the fact that tax evasion is so pervasive. The proper role of progressive income taxation is an extensively debated issue, as is the question of whether personal income tax should have fewer brackets and rates on account of simplicity. Although progressivity remains high on the political agenda in theory, often the political will to enforce income tax compliance is lacking. And on the question of replacing income taxes by broadly based consumption (expenditure) or cash-flow taxes, perplexing philosophical and transitional issues continue to dominate current discussions. Vertical equity is increasingly being perceived as an elusive goal and therefore is being assigned a lower order of priority in tax reform. All recent attempts at tax reform have curtailed tax preferences, especially for investment, but some economists argue that certain tax incentives, such as investment tax credit, are desirable because they lower the user cost of (new) capital, thereby encouraging greater capital formation.

Lessons for tax reform

Tax reform experiences to date offer some important insights into useful tax policy design and institutional development. A detailed discussion of this issue is provided in Khalilzadeh-Shirazi and Shah, (1995). A brief summary is presented below:

1. The value added tax should be an instrument of choice for developing countries contemplating reform of their sales tax. According to Harberger (1990), there was no such thing as value added tax (VAT) some fifty years ago. Since its introduction in the early 1950s, however, VAT has become a fiscal innovation that has swept half of the world, including many developing countries. The VAT has thus become an instrument of choice for most developing countries contemplating reform of their sales tax. A VAT can provide greater revenue, tax neutrality (economic efficiency) and, under certain circumstances and to a limited extent, vertical equity.
2. The base of existing taxes should be broadened at the same time that tax administration

reform is carried out. Base broadening is compatible with a number of economic objectives. It can increase revenues and improve the simplicity, neutrality and equity of the tax system.

3. The use of the tax system for special tax preferences should be carefully evaluated. Using the system to provide tax incentives (tax expenditures) usually causes a serious drain on the national treasury by conferring windfall gains on existing activities or by shifting resources to tax-preferred activities.
4. Tax reform must take into account the initial conditions at home and abroad. In reforming their tax systems, developing countries are severally constrained not only by their own institutional settings but also by the tax structure in capital-importing countries. Moreover, the circumstances in many developing countries are usually such that they would experience serious transitional difficulties if the tax system were to be redesigned from scratch. Developing countries must therefore take into account initial conditions at home and abroad.
5. The credibility of the tax regime is the key to the success of any tax reform. A stable tax policy environment encourages businesses to take a longer-term perspective in their finance and investment decisions. Making tax changes without giving adequate consideration to transitional arrangements can undermine the credibility of the tax regime. Therefore, transitional arrangements require much more careful analysis than they have hitherto been given in developing countries. In addition, tax changes must be presented as part of longer term strategy to improve the public sector environment for the private sector. The tax regime will gain the confidence of business if more attention is paid to the preparation and analysis of reforms, advance consultation, providing a reasonable period of adjustment prior to implementation and ensuring consistency of the reform measures.
6. The tax reform process must be well coordinated. Coordinated tax reform offers significant advantage over isolated piecemeal tinkering with the tax system. A coordinated reform ensures that individual tax changes will be consistent with the central objective. For example, a reduction in tariffs without a corresponding increase in other taxes, generally of a value added type, can increase the fiscal deficit and exacerbate macroeconomic difficulties. Furthermore, to improve economic performance in general, tax reform should be closely integrated with structural adjustment measures.

III. Fiscal performance prior to 1983

The fiscal budget

A detailed assessment of the Ghanaian fiscal performance will not be complete without first examining the structure and coverage of the fiscal budget and its respective constituents. Ghana's fiscal budget covers all governmental functions and activities at national, regional and local levels. All government monies belong to the Consolidated Fund from which all disbursements are made. On the revenue side are three broad categories: tax revenue, non-tax revenue and grants. The expenditure side comprises current and capital (development) expenditure.

Concerning the revenue side, taxes are further divided into indirect taxes and direct taxes. The indirect taxes category comprises taxes on domestic goods and services and taxes on foreign trade and transactions, while the direct taxes side comprises taxes on income and property. Indirect tax estimates are arrived at by adjusting the current figures for the expected rate of growth in domestic demand as well as changes in the volume and composition of this domestic demand. Similarly, direct taxes on income and property are adjusted in accordance with the expected growth of incomes, profits and employment. Here, it is important to single out the role of the cocoa sector both as a foreign exchange earner and vital revenue source of the government.

Non-tax revenues consist of fees, interests, profits and dividends, fines, penalties and forfeitures, and rent from government property. Grants, which are essentially capital receipts, include (largely) borrowing from abroad and local sources.

On the expenditure side are the recurrent and development budget. The recurrent expenditure comprises expenditures on all governmental activities: general administration, law and order, defence, community and social services, and direct government economic activities. This category of expenditure also includes interest payments on public debt as well as transfers or subventions to parastatal organizations. The development expenditure, on the other hand, consists of outlays for acquisition of new capital assets, purchase of existing capital goods and transfers to state-owned enterprises.

The Ghanaian fiscal system, up to 1985, was characterized by a persistent gap between expenditures and revenues, with the gap widening during the fiscal expansion in the mid-1970s and narrowing in the more stable period of the second half of the 1960s. Table 1 shows the central government finances in levels and as percentages of GDP. Figure 1 displays the central government finances as percentage of GDP. Table 1 shows that the budget in each year of 1960–1967 was in surplus, with the surplus reaching 4.1% of GDP.

Table 1: Central government finances (1960–1993)

Year	Current revenue	Total expenditure (In million cedis)	Fiscal balance	Current revenue	Total expenditure (as % of GDP)	Fiscal balance
1960	147	130	16	15.3	13.6	1.1
1961	161	156	5	15.2	15.2	0.5
1962	163	162	1	14.9	14.8	0.1
1963	184	176	8	15.3	14.6	0.6
1964	226	217	9	16.6	16.0	0.7
1965	295	235	60	20.1	16.0	4.1
1966	257	219	38	16.9	14.4	2.5
1967	263	261	3	17.5	17.3	0.2
1968	302	316	-14	17.8	18.6	-0.8
1969	332	370	-39	16.6	18.5	-1.9
1970	437	435	2	19.3	19.2	0.1
1971	450	461	-11	18.0	18.4	-0.4
1972	419	505	-86	14.9	17.9	-3.2
1973	444	553	-109	12.7	15.8	-3.1
1974	652	843	-191	14.0	18.1	-4.1
1975	815	1439	-624	15.4	27.2	-11.8
1976	1075	1868	-793	16.5	28.6	-12.3
1977	1539	2677	-1138	13.8	24.0	-10.2
1978	2186	3625	-1439	10.4	17.3	-6.9
1979	3015	4597	-1582	10.6	16.2	-5.6
1980	3264	6066	-2802	7.6	14.1	-6.5
1981	4539	9847	-5308	6.3	13.6	-7.3
1982	4643	10132	-5490	5.4	11.7	-6.3
1983	10241	15175	-4934	5.6	8.3	-2.7
1984	22641	27485	-4844	8.4	10.2	-1.8
1985	40311	47891	-7580	11.8	14.0	-2.2
1986	73625	73326	299	14.4	14.3	0.1
1987	111046	106987	4059	14.9	14.4	0.5
1988	153791	149880	3911	14.6	14.2	0.4
1989	214513	204161	10352	15.1	14.4	0.7
1990	267347	263960	3387	13.2	13.0	0.2
1991	390690	351515	39175	15.2	13.6	1.6
1992	396143	510813	-114670	14.8	19.1	-4.3
1993	664436	782872	-118436	23.7	27.9	-4.2

Source: Brown (1972).

GOG, Economic Survey (various issues).

GOG, Quarterly Digest of Statistics (various issues).

ISSER (1993).

Figure 1. Central government finances, 1960–1993 (as percentage of GDP)

in 1965, and averaging 1.3% of GDP in 1960–1967. After 1967, the budget moved into deficit and remained in deficit until 1985, except in 1970 when a surplus of some 0.1% of GDP was achieved. The deficits gradually widened from an annual average of 2.8% in 1971–1974 to 11.4% in 1975–1977 and ranged between 1.8% and 7% in 1978–1985. The relatively low deficit/GDP ratio of the 1971–1974 period was not due to any improvement in the share of government revenue in GDP, since the latter declined by 4 percentage points during the period, but was due to the drop in the expenditure/GDP ratio. The expenditure/GDP ratio declined from 19.2% in 1970 to 15.8% in 1973.

An interesting feature of the government finances during the 1970–1982 period was that the current revenue was insufficient to cover the current expenditure, part of which had to be financed from capital receipts. In the 1972–1978 and 1979–1982 periods, for example, current revenue could only cover some 54.9% and 56.9% of total expenditure, respectively, leaving large deficits to be financed from capital receipts (Kusi, 1991). The extremely poor fiscal performance in the period lies at the heart of the economic crisis the country faced. As the expenditure-revenue gap widened amid limited non-inflationary sources of finance, deficit financing became the principal source of the budgetary support, causing the share of government borrowing from the domestic banking system, mainly from the central bank, to increase from 49% in 1970 to 86% in 1982 (Kusi, 1991). The general monetization of the fiscal deficits and the resulting excess demand pressure accelerated the inflation rate, which caused a high over-valuation of the cedi and eroded real producer prices. This led to a drastic decline in agricultural production, especially

Table 2: Sources of government revenue 1960-1982 (in percent of total revenue)

Year	Income and property taxes			Foreign trade taxes			Taxes on domestic goods and services			Non-tax revenue
	Personal income tax	Company tax	Total ¹	Import tax	Export duty	Total	Excise tax	Sales tax ²	Total ³	
1960	6.0	4.2	10.2	30.5	25.9	56.4	-	7.7	12.8	20.6
1961	7.7	5.7	13.4	36.5	19.9	56.4	-	6.9	12.3	17.9
1962	8.6	6.3	14.9	37.2	15.9	53.1	-	5.8	16.3	15.6
1963	6.4	4.8	11.2	37.0	16.4	53.4	-	7.4	18.8	16.5
1964	12.8	12.3	25.1	30.2	13.9	44.1	-	6.2	17.3	13.5
1965	10.0	9.5	19.5	36.5	7.0	43.5	-	6.8	26.4	10.7
1966	9.5	10.5	20.0	29.4	6.3	35.7	-	9.8	32.5	11.9
1967	8.4	11.3	19.7	25.3	13.4	38.7	-	7.4	29.8	11.8
1968	9.4	10.2	19.6	18.6	23.3	41.9	-	7.4	28.2	10.4
1969	7.8	10.7	18.5	18.0	29.8	47.8	7.7	9.4	22.2	9.8
1970	6.7	7.7	15.4	18.3	36.1	54.4	6.7	7.4	19.1	11.1
1971	6.3	7.2	15.1	23.8	26.8	50.6	6.6	7.3	22.4	11.9
1972	8.9	8.2	21.3	13.6	28.5	42.1	10.0	7.5	21.7	14.9
1973	9.3	10.2	23.9	16.1	21.4	37.5	12.3	8.3	26.2	12.5
1974	8.4	10.3	20.1	16.5	27.0	43.5	9.9	4.6	21.8	14.6
1975	10.3	12.8	25.3	11.9	23.0	34.9	22.2	5.1	27.3	12.4
1976	8.7	11.5	22.3	12.0	25.7	37.7	25.0	4.9	29.8	10.2
1977	10.4	9.2	20.1	14.5	32.0	46.5	15.8	3.6	23.8	9.5
1978	8.5	7.0	15.7	15.9	43.2	59.1	10.9	3.3	16.7	8.4
1979	10.2	8.4	20.2	11.9	36.8	48.7	15.4	3.0	24.3	6.8
1980	11.7	11.8	26.1	13.1	12.2	25.3	31.8	6.4	39.0	9.5
1981	14.8	13.6	29.5	14.6	0.1	14.7	33.5	14.4	47.9	7.9
1982	16.1	14.3	32.3	17.4	0.1	17.5	30.7	5.3	35.6	14.5

Source: Brown (1972)

Government of Ghana, Economic Survey (various issues)

Government of Ghana, Quarterly Digest of Statistics (various issues)

¹Includes other taxes on income and property²Includes excise duty up to 1968³Includes purchase tax, cocoa local duty and other output taxes

cocoa, and a worsening of the balance of payments situation. Thus the persistent fiscal deficits forced the government to absorb almost all the credit available in the economy, crowding out private borrowers and causing severe inflation.

This series of problems is not, of course, unusual. The cycle of deficits leading to monetary expansion leading to misaligned real prices (especially exchange rates) is quite common (Younger, 1989), but the severe nature of the Ghanaian problem led to some rather unusual developments. As Figure 1 shows, beginning from 1978, government expenditure as a proportion of GDP, rather than increasing, began to decline sharply, reaching 8% in 1983. Thus the deficits persisted only because revenues also declined.

Trends in revenue

Government revenue has generally been on the increase since 1960. As a percentage of GDP, however, current revenue has declined since 1965, from a share of 20.1% in 1965 to 5.4% in 1982 (Table 1). Both the tax and non-tax revenue contributed to the decline. As the entries in Table 2 show, indirect taxes were the most important sources of government revenue, accounting for more than two-thirds, on average, of the total government revenue in the 1960-1982 period, with tax revenue from international trade providing the bulk of it. The share of international trade taxes in total government revenue declined steadily, however, from 56.4% in 1960-1961 to 14.7% in 1981, caused by the decline in revenue from both import tax and cocoa export duty (export duty is assessed predominantly on cocoa exports). The import tax revenue declined from an average of 35.3% in 1960-1963 to 10.7% of total revenue in 1982, while revenues from cocoa export duty declined sharply in the first half of the 1960s but resumed growth thereafter, reaching 43.2% of total government revenue in 1978. Revenues from cocoa export duty, however, contributed nothing to total government revenue in 1981 and 1982 following the tripling in 1981 of the cocoa producer price and the complete removal of export duty on cocoa in 1981 and 1982 (Kusi, 1991). The fall in import tax revenue was due to such factors as the sluggish growth in non-oil imports (caused by the fall in export earnings and an increase in import bills on oil following the 1973/74 and late 1970s oil shocks), and the artificially low value of imports in terms of domestic currency. Corruption and extensive tax evasion also played a significant part in the decline of the share of import tax revenue in the total revenue of the government.

Taxes on domestic goods and services (excise duty and sales tax), which accounted, on average, for 15.6% of total government revenue in 1960-1964, had in 1977-1982 more than doubled their contribution (Table 2). Indeed, had it not been for the general decline of the economy and the price control system, which resulted in large amounts of potential revenue being lost through parallel market transactions, tax revenue from the domestic goods and services would have expanded more than was realized.

Table 2 also shows that tax receipts from income and property increased steadily, from 10.2% of total government revenue in 1960 to 21.3% in 1972, with some big jumps in 1964 and 1969. Thereafter, the share fluctuated between 15% and 25% until 1980-1982 when the share jumped to an average of 29.3% of total revenue. Over this period,

the relative shares of the major components of income and property taxes, i.e., personal income and company tax, remained fairly stable, with each contributing some 9.3% of total revenue each year over the period. Personal income tax, most of it deductible at source through the pay-as-you-earn (PAYE) system was indeed the most reliable source of government revenue although its contribution to total revenue was low. On the other hand, revenue from company tax, property tax and self-employed tax tended to fall considerably short of its potential due again to extensive evasion and lags in assessment and collection.

Non-tax revenue contribution to total revenue also experienced a serious deterioration in the period. From a share of 20.6% of total revenue in 1960, revenue from non-tax sources steadily declined to 7.9% in 1981, and averaged some 12% in 1960–1982 (Table 2). This contribution was too low considering that the state was heavily involved in various directly productive ventures, with the total number of state-owned enterprises (SOEs) totalling 284 in 1980. Given the extensive involvement of the government in direct production, one would have normally expected the state enterprises to generate surpluses in the form of taxes, interests and dividend payments to finance additional public investment. Instead the SOEs became a drain on the government budget. Their poor performance was due to a multiplicity of factors, including the low level of capacity utilization, overstaffing, price control, poor financial management, corruption and the implicit assurance that state enterprises could always rely on government subsidies even in the face of continual losses (Huq, 1989).

IV. Tax reform and revenue performance, 1983-1993

The tax reform programme

In 1983 the Government of Ghana embarked on a series of fiscal and financial adjustments intended to stimulate economic recovery. Major faces of the adjustment process have been the reform of the tax system and measures to eliminate government budget deficits through expenditure rationalization. On the expenditure side, the policy matrix has been designed to raise capital outlays in the context of a rolling three-year investment programme, aimed at the rehabilitating the economic infrastructure and channelling more resources to operations and maintenance. On the revenue side, government policy has focused on tax reform with the view to removing the existing distortions and strengthening economic incentives, particularly incentives for savings and investment. As well, attempts have been made to enhance efficiency in the tax administration and equity in the overall tax system.

The tax reform process can broadly be divided into three overlapping stages.

First stage: Restoring the tax base

In the initial stage of the fiscal adjustment, 1983–1984, the authorities felt that the tax revenue would benefit from the impact of the exchange rate adjustments on receipts from cocoa export taxes and import duties. In addition, the increased availability of foreign exchange from foreign donors was expected to stimulate import expansion and thus the base of import tax. The tax reform measures were, therefore, designed largely to restore the tax base, which had been seriously eroded by the persistent over-valuation of the domestic currency and the large divergence between the official prices (the base at which taxes were assessed) and market prices (at which transactions take place). The measures were also expected to widen the tax net, reduce evasion and lower the tax burden. To begin with, a multiple exchange rate system was introduced in April 1983. This system imposed surcharges on foreign exchange payments and bonuses on foreign exchange receipts, and effectively resulted in two exchange rates – 23.38 cedis = US\$1 and 29.98 cedis = US\$1, respectively, from 2.75 cedis = US\$1. In October 1983, the two effective exchange rates were unified, resulting in an effective exchange rate of 30 cedis = US\$1. The exchange rate has periodically been adjusted since then, so that by 1993 it had reached 720 cedis = US\$1.

The pricing policy, which for a long time had been a mixture of administered (control)

prices for manufactured goods and market-determined prices for agricultural products, supported officially by minimum guaranteed prices for cocoa and cereals, was deregulated over the same period. For consumer goods, prices were allowed to fully reflect production costs plus profit margins, while for cocoa, maize, rice and palm oil, a flexible producer pricing system was adopted to maintain prices at levels that provided adequate incentives to producers. Further, budgetary subsidies for consumer goods and public utilities were gradually removed and fees, levies and charges for the various public sector services were revised upward as part of the new cost recovery measures.

In addition to the exchange rate and price reform, the system for tax assessment for import duties, sales and purchase tax were revised to make the bases of dutiable goods reflect their full face value plus some surcharges. The basis for tax assessment for corporate income tax was similarly changed from profits of the previous year to actual income earned during the current year. In addition, the practice of advance payments of taxes at the beginning of each quarter, which had caused extensive evasion, was discontinued. Instead, corporate bodies and the self-employed were allowed to pay taxes at the end of the quarter. In the case of personal income tax, the lowest tax-free bracket was raised and the marginal rates lowered to reduce the average effective rates.

Second stage: Strengthening production incentives

The second stage of the tax reform process saw the introduction of an Investment Code (PNDC Law 116, 1985) and a new Minerals Law (Minerals Commission Law, 1986). The investment code provided for a wide range of tax incentives to domestic and foreign investors. The code identified four areas – agriculture, manufacturing, construction and buildings and tourism – as priority areas of investment. In these areas any enterprise engaging in any activity qualified for certain tax benefits and incentives. The details of the benefits and incentives granted under the code are provided in Table 3 and in addition to these there were many others. First, where an enterprise with priority status undertook or supported an approved programme of scientific research for the purposes of developing or advancing the said enterprise, the capital expenditure in respect of such research was fully tax deductible. Second, any enterprise located outside the Accra-Tema metropolitan area also qualified for income tax reduction ranging from 15% to 40% depending on the area of location. The code also provided for reduction or deferment of income tax payable by enterprises in areas lacking in basic infrastructure and where the enterprise undertook the costs of providing such infrastructure.

On its part, the Minerals Law modified eight existing laws, clarified mining rights and set out new incentives for investors. The incentives included, among others, corporate tax allowances, capital allowances under which companies could write off between 40% and 100% of capital investment against tax, and permission for companies to use offshore bank accounts to service foreign loans, dividend payments and expatriate staff remuneration.

Table 3: Tax incentives and benefits under 1985 investment code

Incentive/benefit	Agriculture	Manufacturing	Construction and building	Tourism
1 Custom duties - import duty, sales tax, and other related charges	Exempted on plant, machinery, equipment and accessories imported exclusively to establish establishment enterprise	Exempted on plant, machinery, equipment and accessories imported exclusively to establish enterprise	Exempted on plant, machinery, equipment and accessories imported exclusively to establish enterprise	Exempted on plant, machinery, equipment and accessories imported exclusively to establish enterprise
2 Corporate income tax	45%	55%	55%	55%
3 Depreciation or capital allowance	100% in the first year of investment	40% in the first year of investment and 20% in subsequent years	50% in the first year of investment and 25% in subsequent years	Plant and machinery - 50% in the first year of investment and 25% in subsequent years. Buildings - 20% in the first year of investment and 10% in subsequent years
4 Investment allowance	100% per annum	7.5% per annum	7.5% per annum	7.5% per annum
5 Income tax rebates	(a) In the case of tree crops and livestock (excluding poultry): 75% in the first year, 50% in the second year, and 25% in the third year (b) Exemption of staff from payment of income tax relating to furnished accommodation (c) Rebates to the value of social security contributions payable in respect of Charanian employees in excess of 20	Rebates to the value of social security contributions payable in respect of Charanian employees in excess of 100 (b) Rebates to the value of social security contributions in respect of Charanian employees in excess of 75	(a) Exemption of staff from income tax relating to accommodation provided on building or construction site (b) Rebates to the value of social security contributions in respect of Charanian employees in excess of 75	Exempt from taxes and rates levied on buildings or properties for a period not exceeding 3 years

Source: Government of Ghana, Investment Code 1985 (PNDC Law 116).

Third stage: Enhancing tax efficiency and equity

The focus of the tax reforms after 1985 was broadened to include the enhancement of efficiency of the tax administration and equity of the tax system. The pace of the tax reforms during this period was also increased and more attention was paid to the strengthening of private sector incentives.

The effectiveness of tax administration is vital to attaining the objectives of every reform of the tax structure. Until 1986, the primary function of tax administration – facilitating and monitoring taxpayer compliance and preventing non-compliance – had operated very inefficiently. The Customs, Excise and Preventive Service (CEPS) and the Internal Revenue Service (IRS) were unable to plan or carry out reforms to improve productivity. Qualified staff were difficult to attract and retain, morale was low, corruption was rife, and some staff held more than one job to compensate for the low wages. Low yield and high costs of taxpayer inspections and audits were a prominent feature of the tax administration. As a major part of the tax reform programme, a considerable number of steps were taken to strengthen the role of the revenue institutions in achieving the objectives of increasing revenue and changing the structure of the tax system to make it more efficient and equitable. The most dynamic step taken was the conversion of the IRS and CEPS into autonomous services with new organizational structures in line with the state-owned enterprises in 1986. At the same time, the remuneration, career path and other human resource issues of the new structures were reviewed and embodied in a Collective Work Agreement. The agreement also established new incentive policies including promotion procedures and training for the staff of the IRS and CEPS. These initiatives were aimed at generating from within the new organizations the necessary changes to improve productivity, particularly in the area of tax collection.

Between 1986 and 1992, the IRS itself operated with a ministerial powers alongside the Ministry of Finance. In 1992, this full autonomy was partially reversed, and currently the IRS is headed by a director who reports to the Minister of Finance. The IRS, however, continues to have a supervisory control over the collection of revenue in the country. In terms of the functional reorganization of the revenue institutions, both revenue and expenditure accounting have been detached from the Treasury and coordinated only by regular returns submitted by the IRS and CEPS to the Secretariat, the Treasury and the Central Bank (Terkper, 1994).

The move toward self-assessment of taxes has been slow as a result of the poor culture for filing returns in the country. Both the IRS and CEPS have therefore been reviewing their examination and audit practices. The IRS, for example, has begun a major review of its taxpayer master file, using names extracted from the presumptive tax scheme it operates for identifiable groups. The aim of this exercise is to further expand the tax base and improve the equity of taxation of self-employed persons in the country. The CEPS, for its part, is to extend its more rigorous field audit of domestic firms to cover the operation of taxation of international trade.

Upon the advice of the World Bank in 1989, the government took the initiative to computerize the tax administration management information systems and introduced a

unique taxpayer identification number system.

On the direct side, the aim of the corporate tax reform has been the gradual reduction of tax rates and the elimination of the distortions that arise from applying multitude of tax rules to different form of capital financing and sectoral incomes. In 1986, the corporate tax rate stood at 55%, with the exception of mining and manufacturing which faced a tax rate of 50%. By 1991, the applicable rate for real estate, manufacturing and construction had been slashed to 35%, while the rate for commerce, printing, and publishing was reduced from 50% to 35% in 1992. The rate applied to banking also went down, from 50% in 1991 to 40% in 1992. By 1993, all rates had been reduced to 35%, with the exception of the rate applied to the mining sector. That rate was reduced to 35% in 1994, following the amendments to the Petroleum and Mining Law. In addition, the capital depreciation allowances provided under the 1985 Investment Code were extended to all enterprises in the manufacturing sector.

Regarding capital gains tax, the rates, until 1989, were: assets in use under 5 years, 55%; between 5 and 10 years, 45%; between 10 and 15 years, 35%; and between 15 and 20 years, 25%. In 1990, these were changed to: assets in use under one year 50%; and between 2 and 20 years, 2.5%. In 1991, a flat rate of 5% was introduced to replace the progressive structure of the tax (GOG, 1988, 1991, 1992a), with income from mergers and acquisitions and publicly traded shares exempted from capital gains tax. The reduction was intended to reduce the impact of taxing the inflationary element in the disposition of assets.

Prior to 1991, the tax on dividends was withheld at 30% and credited to any shareholder who filed a return at the end of the year. However, given the poor record of filing annual returns in the country, the withholding tax effectively became a 30% tax for most corporate distributions of profit, creating an element of double taxation due to the original taxation of corporate profits. In 1991, the withholding tax on dividend payments was converted to a final tax and then reduced from 15% to 10% in 1992 (GOG, 1991, 1992a).

Significant changes were also introduced in the personal income tax system during this period. Although the changes were meant to discourage the spurious allowances granted under the former system, the fundamental goal was to lower the tax rates to minimize the disincentives to increased productivity and entrepreneurship. In place of the previous 17 tax brackets, 5 brackets were introduced in 1986 with new effective tax rates that provided substantial relief to the low-income earners (Table 4). The changes provided for a reduction of the top marginal rate of 60% (which previously applied to annual chargeable income exceeding 75,000 cedis) to 55% applicable only when a taxpayer's annual chargeable income exceeds 180,000 cedis. For those earning the minimum wage, the new rate of tax was only about half the rate paid in 1985. Taxpayers could also claim additional relief for expenses incurred in their children's education and contributions to pension and social security. Personal income tax relief to unmarried persons was also increased by 100%. For married persons filing separate tax returns, an increase of some 92% in tax relief was granted. Additional tax relief was also provided on end-of-service awards.

The income tax burden was further lowered during the 1987-1993 period through substantial upward adjustments in personal allowances and the minimum tax-free income

threshold. Further increases in personal allowances at rates well in excess of expected inflation were allowed during the period. In addition, the base of personal income tax was broadened to include all allowances (comprising mainly allowances for housing, transport, leave and meals) paid to employees in both the public and private sectors. To offset the impact of this measure on disposable incomes, the top marginal rate of personal income tax was reduced from 55% in 1990 to 25% in 1991, and then to 35% in 1993 (Table 4; GOG, 1991, 1994). By so doing, the top marginal rate of personal income tax was made equal to the corporate tax rate. It was thought that such unification would minimize the shifting of income by individuals under tax avoidance and evasion schemes. In 1992, the ranges of income covered by the tax bands were increased significantly to

Table 4: Personal income tax schedule, 1985 and 1993

1 9 8 5		1 9 9 3	
Taxable income (cedis)	Marginal rate (%)	Taxable income (cedis)	Marginal rate (%)
0 - 5,000	Free	First 150,000	Free
5,001 - 7,000	5.0	Next 291,000	5
7,001 - 9,000	7.5	Next 441,000	10
9,001 - 11,000	10.5	Next 2,640,000	15
11,001 - 14,000	12.5	Next 10,560,000	25
14,001 - 16,000	15.0	Exceeding 14,082,000	35
16,001 - 19,000	17.0		
19,001 - 22,000	20.0		
22,001 - 25,000	23.0		
25,001 - 30,000	25.0		
30,001 - 35,000	30.0		
35,001 - 40,000	35.0		
40,001 - 45,000	40.0		
45,001 - 50,000	45.0		
50,001 - 60,000	50.0		
60,001 - 75,000	55.0		
Above 75,000	60.0		

Source: World Bank (1985); Government of Ghana (1993).

alleviate the burdensome effects of increased inflation and consolidation of all allowances with salaries.

The tax reforms also affected the system of indirect taxation. The most important changes in this area included the lowering of tariff rates and achieving horizontal and vertical equity through a wider spread of the burden of indirect taxation. Beginning from 1987, all excise duties on products other than petroleum, beverages and tobacco were abolished, with the revenue loss compensated for by an increase in the general sales tax rate from 10% to 20% and subsequently to 25%. In 1989, the rate was reduced to 22.5% and was lowered further to 17.5% in 1991. The sales tax rate on luxury items, however, was raised from 20% in 1987 to 35% in 1988, and remained at this level through 1993. A “super sales tax”, ranging from 75% to 100% of the c.i.f and ex-factory cost, was introduced for very high-class luxury consumption goods in 1990. This was eliminated from the tax structure in 1992 because, even though the tax was to be levied on all luxury consumption, its practical administration and implementation tended to apply only to imports, thus increasing the effective rate of protection for local industries (GOG, 1992a). Moreover, the high rates of the tax encouraged misclassification, evasion and avoidance (Terkper, 1994). Efforts were also made to replace the “ring” system of sales tax collection with a “credit” system.

The windfall gains on petroleum sales were also converted to a specific excise duty on petroleum products. This was to ensure that revenue from petroleum products would accrue to the budget in the event of a rise in world oil prices. In 1988, petroleum tax rates were more than doubled and have since been marked upwards, reaching 35% of the average retail price in 1990. In 1992 and 1993 fiscal years, however, petroleum excise tax revenue fell short of the expected target due primarily to public resistance to the price increases. The government contends that the increases in petroleum excise tax should be regarded as only a part of a longer-term strategy to create a more equitable and broad-based system of taxation.

Regarding import duties, the view of the tariff policy was that the search for economic efficiency would make an across-the-board increases undesirable. For this reason, the special taxes levied on the local production of textiles, tobacco, alcoholic and non-alcoholic beverages, etc., were made to apply to imports of such items, beginning from 1988. In addition, import duty and sales tax applicable to local production of textiles were also made applicable to imports of similar goods. The special taxes and import duties were to represent the primary levies to protect local industries. However, in 1990, the special taxes were compressed into a uniform rate of 10% as the authorities realized the possibility of these variety of taxes perpetuating inefficiency in local production and rendering the local industries internationally uncompetitive. At the same time, the import licensing requirements were gradually removed and duty rates lowered by some 5 percentage points, reducing the primary import tariff rate on most goods to 25% in 1991.

Revenue performance

Perhaps the most glaring impact of the fiscal adjustment is the tremendous increases in

government revenue of all sources. These increases, in turn, contributed to the restoration of fiscal discipline. For example, the budget deficit was reversed from a deficit of 2.7% of GDP in 1983 to a surplus of 1.5% in 1991. However, it became difficult to sustain this impressive performance in 1992 and 1993. The budget moved back into a deficit, amounting to 4.8% of GDP in 1992, but this was reduced to 2.9% in 1993 (GOG, 1988, 1994).

Total government revenue grew by more than 26 times between 1983 and 1993, causing the revenue/GDP ratio to increase from 5.6% in 1983 to nearly 24% in 1993 (GOG, 1994). Tax revenue increased from 4.6% of GDP in 1983 to 12.7% in 1987. Thereafter, the share declined gradually to 11.6% in 1990 before rising sharply to 18% in 1993 (GOG, 1988, 1994).

Of the non-grant sources of revenue, taxes on domestic goods and services showed the highest growth, with revenue from this source in 1993 exceeding 125 times the level in 1983. Revenue from taxes on foreign trade and transactions in 1993 were 35 times the level in 1983, while income and property tax revenue in 1993 was over 63 times its level in 1983 (ISSER, 1993).

Between 1970 and 1980, taxes on foreign trade and transactions contributed, on average, some 44% of the total government revenue. By 1981, the contribution of foreign trade taxes to total revenue had fallen to below 15% (Table 2). The reform measures introduced after 1982, however, led to a sharp rise in the share of foreign trade taxes in total revenue to 48.3% in 1983 before declining steadily to 26.7% in 1993 (Table 5). The tax reform process also led to a big change in the relative shares of the components of the foreign trade taxes, i.e, import tax and export duty. Whereas in 1983 some 28.6% of the total tax revenue was derived from export duty, by 1993 the share of export duty had fallen to under 6%. On the other hand, the share of import tax receipts in total tax revenue increased from 19.7% in 1983 to 23.8% in 1990 before declining to 21% in 1993 (Table 4). Thus, import tax replaced export duty as the major source of revenue originating from foreign trade after 1987.

Since revenue from export duty is predominantly duty on cocoa exports, the decline in the former was due to the decline in cocoa duty revenue, which itself was due to the falling cocoa prices on the world market and the government's policy to pay a realistic producer price to cocoa farmers, particularly in 1981-1982 and the period after 1987. The world market price of cocoa dropped from 2,300 cedis per tonne in July 1987 to 1,800 cedis per tonne in July 1988. The 1989 budget predicted that the 1988 price would fall and become stable at 1,400 cedis per tonne but due to the unleashing of accumulated stocks of cocoa by the major producers, prices tumbled to 1,045 cedis per tonne, causing over 25% loss of cocoa export receipts and thus cocoa export tax revenue over the period (Stryker, 1990).

The tax reform also produced a noticeable impact on the revenue from and composition of taxes on domestic goods and services. In 1983, revenue from taxes on domestic goods and services accounted for some 17.1% of total government revenue. By 1993 the share had reached 34.3%, with most of the improvement occurring in the 1991-1993 period. Excise tax revenue which contributed 22.3% to total revenue in 1984, was in 1993 contributing a mere 6.2%, with a dip in 1991 (Table 5). The decline in the excise tax

Table 5: Sources of government revenue, 1983-1993 (percentage of total revenue)

Year	Income and property taxes			International trade taxes			Domestic goods and services taxes			Non-tax revenue
	Personal income tax	Company tax	Total ¹	Import tax	Export tax	Total ²	Excise tax	Petroleum tax	Sales tax	
1983	8.6	7.4	16.9	19.7	28.6	48.3	14.8	-	2.3	17.1
1984	7.5	9.4	17.7	14.8	21.5	36.3	22.3	-	2.4	21.2
1985	7.5	11.3	19.1	16.4	22.8	39.1	17.8	-	3.0	21.0
1986	6.4	13.1	19.8	17.5	19.2	36.8	14.2	9.0	3.8	16.3
1987	7.3	13.0	21.1	16.2	24.3	40.5	11.5	4.9	7.9	14.1
1988	7.2	18.0	25.8	16.4	15.9	32.4	9.8	5.2	8.6	18.2
1989	5.9	15.2	21.7	22.7	14.6	37.2	8.9	7.0	8.6	16.5
1990	6.3	12.2	19.3	23.8	9.8	33.6	8.6	9.5	9.1	19.9
1991	4.6	10.0	15.4	19.4	8.1	27.5	6.7	18.7	6.1	25.6
1992	6.7	10.3	18.3	21.4	9.7	31.1	8.1	20.9	6.3	15.2
1993		8.4	16.6	21.0	5.8	26.7	6.2	22.7	5.4	22.3

Source: Government of Ghana, Quarterly Digest of Economics (various issues); ISSER (1993).

¹ Including property tax, interest and dividend tax.

² Including other trade taxes.

revenue was due to the re-classification of petroleum tax as a separate tax and the conversion of excise duties on all products other than tobacco and beverages to sales tax. The biggest increases in revenue over the period came from the contribution of petroleum taxes. Originally included as part of excise duty, taxes on petroleum products became full taxes in 1986 and, despite the authorities inability to raise the revenue anticipated from this source in 1993, revenue from petroleum taxes increased from 4.9% of total revenue in 1987 to 22.7% in 1993 (Table 5). These taxes thus appear to have replaced taxes on cocoa as the most important source of revenue for the government.

The contribution of taxes from income and property to total tax revenue was similarly affected by the reform measures. In relation to total revenue, the share of taxes from income and property increased from 16.9% in 1983 to 21.1% in 1987, and then jumped to an all time record of 25.8% in 1988. Thereafter, the share declined gradually, reaching 16.6% in 1993 (Table 5). Generally, the lack of growth in direct taxes in developing countries may reflect the relative strength of indirect taxes. However, in Ghana, it was also likely to be the result of the reductions in the marginal rates of personal and corporate taxes and the widening of the individual tax brackets.

From the point of view of the relative shares of its components, the structure of income tax did not change much during the 1983-1993 period. It is important to notice, however, that revenue from company taxes increased its contribution to total tax revenue from 7.4% in 1983 to 18% in 1988, while the share of personal income tax declined from 8.6% to 6.7% (Table 5). This development reflected the availability of foreign exchange, which permitted large imports of essential inputs to support the recovery in the growth of industrial production, and the abolition of the price control system, which permitted producers to set prices at domestic market levels, thereby increasing sales value and thus companies' incomes and profits. The drop in the share of income tax revenue was largely the result of an income tax policy that sought to reduce the tax burden on personal incomes. Although taxes on incomes of self-employed persons expanded, the increases were very slow compared with the reduction in taxes on employees' incomes.

V. Measurement of revenue productivity

The relative composition of tax revenue has implications for revenue growth and stability when it is considered that taxes may be primarily mobilized to finance government expenditures, both recurrent and capital. A high revenue productivity is usually considered as one of the criteria of a good tax system in developing countries. This productivity is traditionally measured by the concepts of tax buoyancy and tax elasticity.

Tax buoyancy and elasticity

Changes in any individual tax revenue result from discretionary changes in the legal rates and rules governing the tax, and/or endogenous changes in the base on which the tax is imposed. The base is affected by, among others, variations in GDP. Therefore growth in tax revenue in response to GDP growth can be decomposed into two components: the “automatic” growth, and the growth resulting from “discretionary” changes in the tax rates and rules. The combined effect is known as the “buoyancy” of the tax. The automatic growth in the tax revenue alone, abstracting from discretionary changes, is the elasticity of the tax. A high tax elasticity, i.e., a tax elasticity coefficient of one or more, is said to be particularly desirable since it allows growth in expenditure to be financed by raising tax revenue without recourse to the politically unpopular decision to raise tax rates (Mansfield, 1972).

Conventionally, the elasticity of total tax revenue in relation to income has been presented in aggregate models as a single number. However, it is more realistic to visualize the overall tax elasticity as a weighted average of the sum of the elasticities of individual taxes that respond in diverse ways to changes in income. This implies that an evaluation of the overall tax elasticity must commence with an examination of the individual tax elasticities.

Symbolically, Mansfield (1972) has defined these elasticities as follows:

$$\begin{array}{ll} \text{Elasticity of total tax revenue to income:} & E_{TY} = \frac{\Delta T_t}{\Delta Y} \cdot \frac{Y}{T_t} \\ \text{Elasticity of } k^{\text{th}} \text{ individual tax to income:} & E_{T_k Y} = \frac{\Delta T_k}{\Delta Y} \cdot \frac{Y}{T_k} \\ \text{Elasticity of } k^{\text{th}} \text{ individual tax to base:} & E_{T_k B_k} = \frac{\Delta T_k}{\Delta B_k} \cdot \frac{B_k}{T_k} \end{array}$$

Elasticity of kth individual base to income: $E_{B_k Y} = \frac{\Delta B_k}{\Delta Y} \cdot \frac{Y}{B_k}$

where

T_t = total tax revenue

T_k = revenue from kth tax

Y = income (GDP)

B_k = base of kth tax

Δ = the discrete change in the variable associated with it.

Given these definitions of elasticity, it follows that in a system of n taxes:

$$E_{T_t Y} = \frac{T_1}{T_t} \left(\frac{T_1}{\Delta Y} \cdot \frac{Y}{T_1} \right) + \dots + \frac{T_k}{T_t} \left(\frac{\Delta T_k}{\Delta Y} \cdot \frac{Y}{T_k} \right) + \dots + \frac{T_n}{T_t} \left(\frac{\Delta T_n}{\Delta Y} \cdot \frac{Y}{T_n} \right) \quad (1)$$

According to Equation 1, the elasticity of total tax revenue to income is equal to the weighted sum of individual tax elasticities (where the weights are the fractional distributions to total tax by each individual tax).

The elasticity of any individual tax may also be decomposed into the product of the elasticity of the tax to its base and the elasticity of the base to income:

$$E_{T_k Y} = \left(\frac{\Delta T}{\Delta B_k} \cdot \frac{B_k}{T_k} \right) \left(\frac{\Delta B_k}{\Delta Y} \cdot \frac{Y}{B_k} \right) \quad (2)$$

Combining Equations 1 and 2 gives

$$E_{T_t Y} = \frac{T_1}{T_t} \left[\left(\frac{\Delta T_1}{\Delta B_1} \cdot \frac{B_1}{T_1} \right) \left(\frac{\Delta B_1}{\Delta Y} \cdot \frac{Y}{B_1} \right) \right] + \dots + \frac{T_k}{T_t} \left[\left(\frac{\Delta T_k}{\Delta B_k} \cdot \frac{B_k}{T_k} \right) \left(\frac{\Delta B_k}{\Delta Y} \cdot \frac{Y}{B_k} \right) \right] + \dots + \frac{T_n}{T_t} \left[\left(\frac{\Delta T_n}{\Delta B_n} \cdot \frac{B_n}{T_n} \right) \left(\frac{\Delta B_n}{\Delta Y} \cdot \frac{Y}{B_n} \right) \right] \quad (3)$$

which shows that the elasticity of total revenue to income in a system of n taxes depends on the product of the elasticity of tax to base and base to income for each individual tax, weighted by the importance of each tax in the overall tax system.

Estimation of tax elasticity and buoyancy

Two methods have traditionally been employed to estimate tax elasticities. These are the historical time-series tax data (HTSTD) adjusted to discretionary tax measures (DTMs) and the unadjusted HTSTD with time trends or dummy variables as proxies for DTMs.

The HTSTD adjusted to DTMs approach

This approach attempts to eliminate discretionary tax changes (defined as the legal changes in the tax rates, tax bases, tax allowances and credits, and of tax administrative efficiency) from the HTSTD and then uses the adjusted HTSTD to estimate tax elasticity by the following single-equation model:

$$\log (T_t^*) = \log a + b_1 \log (B_t) + e_t \quad (4)$$

where

T^* = adjusted HTSTD to discretionary tax changes

B = tax base (or GDP in aggregate level)

e = disturbance term

b_1 = tax elasticity

The underlying functional relationship of Equation 4 is given as:

$$T_t^* = aB^{b_1} \quad (5)$$

In adjusting the HTSTD to discretionary effects, the usual practice has been to use either the proportional adjustment (PA) technique or the constant rate structure (CRS) technique.

The PA method was originally developed by Prest (1962) and has since been used by Mansfield (1972), Jeetun (1978), Sury (1985), Gillani (1986), Lambert and Suckling (1986), and Osoro (1993). In this method, a series of adjusted tax revenue is first obtained by subtracting from the actual tax revenue in each year the budget estimate of the revenue impact of discretionary changes in that year. The series is further adjusted by excluding the continuing impact of each discretionary change on future year's tax revenue as given in Equation 6.

$$T_{ij} = T_{j-1,j} \cdot \frac{T_{j-2,j-1}}{T_{j-1}} \cdot \dots \cdot \frac{T_{2,3}}{T_3} \cdot \frac{T_{1,2}}{T_2} \quad (6)$$

where

T_j = the actual tax revenue in the jth year

T_{ij} = the jth year's actual tax revenue adjusted to the tax structure existing in the year I

$T_{j-1,j}$ = $T_j - D_j$ (where D_j is the revenue effect - positive or negative - in the jth year of the discretionary tax changes in that year)

The CRS method, on the other hand, requires data on income bracket (or commodity) rates and sufficiently disaggregated information on the growth and distribution of the reported tax bases (see Bahl, 1972; Andersen, 1973; Chelliah and Sheetal, 1974; Choudhry, 1975). If such disaggregated information is available, then a constant rate base representing a hypothetical tax revenue under a system assumed to remain unchanged during the period under review can be constructed as follows:

$$(T_t^*) = \sum_{i=0}^n (R_{io})(B_{it}) \quad (7)$$

where

T^* = adjusted HTSTD to discretionary changes

R_{io} = the base-year statutory tax rate on the ith income bracket (or commodity)

B_{it} = reported tax base in the ith income bracket (or commodity) in the tth year

n = number of income brackets (or commodities)

A major problem with the PA and CRS techniques is that they are unable to completely adjust the HTSTD to discretionary changes. For its part, the PA method uses budget estimates of discretionary tax changes that are difficult to obtain in many developing countries. The CRS technique, on the other hand, requires information on the distribution of tax bases by rate categories, which are also not readily available. The result is that the effective tax rates of the broad income brackets (or commodity groups) that are empirically used assume a constant interclass (on intergrouping) distribution of the tax base throughout the period under review. Clearly, the validity of this assumption weakens as the number of the income classes or commodity groups reduces due to aggregation. Furthermore, Ehdaie (1990) has pointed out that both the PA and CRS techniques incorporate only the discretionary tax changes resulting from changes in statutory tax rates, thereby ignoring the own- and cross-DTMs indirect responses of tax revenues and the impact of changes in the degree of tax evasion, administrative efficiency, tax bases, and tax credits and allowances. However, the technique suggested by Ehdaie itself suffers from the fate of incomplete adjustment for the DTMs, arising from the fact that the base year values used

in his approach include the revenue effects of the DTMs.

Choudhry (1979) has argued that in some situations, the CRS technique becomes inefficient. First, where a tax system has many progressive elements, the CRS technique does not guarantee that the estimated tax elasticity will be larger (or smaller) than that of the tax buoyancy even when discretionary changes produce negative (or positive) effects. Second, where tax bases grow at the same rate, there is the possibility that the elasticity estimate will fail to detect the effects of discretionary changes.

The unadjusted HTSTD with proxies for DTMs approach

This approach estimates tax elasticity directly from HTSTD using time trends or dummy variables as proxy for DTMs. Choudhry (1979) employs a divisia index method (DIM) in which time trends are introduced as proxy for DTMs in the tax revenue and tax base functions. The approach starts with the following function:

$$\log D(n) = \log \left[\frac{T(n)}{T(0)} \right] - \sum_{i=1}^k B_i \log \left[\frac{B_i(n)}{B_i(0)} \right] \quad (8)$$

where $\log D(n)$ is the index of discretionary tax measures.

To obtain the elasticity estimates, the index of discretionary tax measures is adjusted by using the following formula:

$$E_t = Z_t - \frac{\log D(n)}{\log B(n) / B(0)} \quad (9)$$

where

E_t = tax elasticity

Z_t = tax buoyancy (obtained by regressing actual tax revenue on GDP using logarithm form equation)

$\log D(n)$ = divisia index of discretionary tax revenue

$\log B(n)/B(0)$ = index of automatic growth of the proxy tax base

The problem with the DIM is that the formula derived to estimate the tax elasticity is a line integral and, in practical application, its discrete version is used, causing bias in the estimate of the revenue impact of discretionary changes. The bias can result in over or underestimating the tax elasticity depending on whether the discretionary tax changes produce positive or negative revenue effects. (For the derivation and proof of the formula

and its implications see Choudhry, 1979: 87-121).

In an alternative approach, Chand and Wolf (1973), Khan (1973), and Artus (1974) incorporate one dummy variable (simple or mixed) as a proxy for each of the DTMs introduced during the periods of their review to estimate tax elasticity by means of a single-equation model of the form:

$$\log(T)_t = B_0 + B_1 \log(B)_t + \sum_{i=1}^n B_{2i} D_i + U_t \quad (10)$$

where

T = tax revenue

B = tax base (or GDP in aggregate level)

D_i = dummy variable (simple or mixed) as proxy for the ith DTM taken during the period under review

B₁ = tax elasticity

The estimate of tax elasticity obtained from this approach may not be precise and reliable because of the creation of potential multicollinearity problems resulting from the inclusion of more than one dummy variable into the tax function. Ehdaie (1990) has argued that the degree of precision and reliability of the elasticity estimate are inversely related to the degree of multicollinearity, which in turn depends greatly on the time interval that existed between two successive discretionary actions taken by the tax authorities. This implies that obtaining a precise and reliable estimate of tax elasticity by means of this approach is empirically impossible, particularly when there are frequent discretionary tax changes during the review period.

The approach adopted in this study to estimate the tax elasticities is the HTSTD adjusted to DTMs using the proportional adjustment technique. The starting point is Equation 2, which shows that the elasticity of any individual tax is a product of the elasticity of the tax to its base and the elasticity of the base to income. Accordingly, we proceed to estimate the elasticity of the tax to its base by using the traditional model as expressed in Equation 4. That is:

$$\log(T^*)_t = \log a + b_1 \log(B)_t + e_t$$

where $\partial \log(T^*)_t / \partial \log(B)_t$ = elasticity of the tax to its base.

The elasticity of the base to income is similarly estimated by using a single-equation model:

$$\log(B)_t = \log c + d_1 \log(GDP)_t + v_t \quad (11)$$

where $\partial \log(B)_t / \partial \log(GDP)_t$ = elasticity of the tax base to income

Finally, the elasticity of the tax to income (E_T) is obtained as :

$$E_T = [\partial \log(T_i^*) / \partial \log(B_i)] [\partial \log(B_i) / \partial \log(GDP_i)] \quad (12)$$

The tax buoyancy is estimated by running an ordinary least squares regression of:

$$\text{Log } (T_i) = w_o + w_i \log (GDP)_i + ut \quad (13)$$

where T_i is the unadjusted tax revenue, and w_i the tax buoyancy.

VI. The elasticity of the Ghanaian tax system

Proxy tax base

Estimation of tax elasticity requires a specification of the potential proxy or tax bases and time-series data on the individual taxes and GDP. The World Bank (1984) in estimating the elasticity of the Ghanaian tax system for the period 1970/71–1980/81 considered GDP, private consumption expenditure, non-oil imports and cocoa export receipts as proxy bases for income tax, taxes on domestic production and consumption (i.e., excise tax and sales), import duty and export tax, respectively. In this study elasticities are estimated separately for company tax and personal income tax. For company tax, the specified proxy base is corporate current income (defined to include incomes from the sectors with the highest concentration of corporate activities, i.e., logging, manufacturing, mining, construction, water and electricity, and finance). The proxy base taken for personal income tax is current personal income (defined to include employees emoluments, both public and private, plus incomes from the trading and commercial sectors as proxy measure of the self-employed income). Since excise tax is levied only on manufactured goods in Ghana, the potential proxy base is income (value added) from the manufacturing sector. For sales tax, import tax and cocoa export duty, the proxy bases are the same as those specified by the World Bank, i.e., private consumption expenditures, non-oil imports (adjusted for capital import exemptions for the relevant years) and cocoa export receipts, respectively.

Petroleum tax is excluded from the empirical analysis because prior to 1986 petroleum tax receipts were treated as part of excise duty revenue. Hence no time-series data on taxes on petroleum for the period leading to 1986 are available. This leaves us with time-series annual data for eight years, which is too short for any meaningful tax elasticity estimation.

Data

Data for the empirical analysis were obtained from two main sources, the Government of Ghana and the International Monetary Fund. The Ghana Statistical Service (GSS) publishes Quarterly Digest of Statistics (QDS), which contains, among others, time-series (annual) data on economic classification of central government revenue and national

accounts. In addition, the Ministry of Finance publishes annually the Budget Statement and Economic Policy of the Government, which usually contain data on the major sources of government revenue and expenditures. Data on individual and overall tax revenue, GDP and potential tax bases were obtained from these publications. The IMF publishes annually the Government Finance Statistics Yearbook, which also contains time series data on central government operations of member countries. Data from this source were used to supplement those obtained from the GSS Quarterly Digest of Statistics.

Estimated tax buoyancies and elasticities

Point estimates of tax buoyancies and elasticities for the major taxes and the overall tax system for the 1970–1982 and 1983–1993 periods are presented in Table 6. All the coefficients are significant at the 5% level and have the expected signs, except the coefficients of the export tax buoyancy and elasticity for the 1970–1982 period. The adjusted coefficients of determination ($\bar{R}^{2,s}$) indicate that, in general, changes in the proxy bases explain over 80% of the changes in the tax revenues. The reported DW statistics also indicate the absence of autocorrelation in all the regressions.

The overall tax system

The coefficients in Table 6 show that the tax reform measures of the 1983–1993 period had a tremendous positive effect on the productivity of both the individual taxes and the overall tax system. In the 1970–1982 period, all the individual taxes, except excise duty, had estimated buoyancies of less than unity, thereby causing the total tax system to have a buoyancy of 0.72. During the tax reform period of 1983–1993, however, all the individual taxes, except excise duty and cocoa export duty, showed buoyancies of more than unity, causing the buoyancy of the overall tax system to increase to 1.29. Compared with the 1970–1982 period the tax buoyancy increased by 79.9% in the 1983–1993 period.

The estimated income elasticity of the overall tax system for 1970–1982 was very low, 0.71, brought about because all the individual taxes, except for excise duty, had estimated elasticities of less than unity. The income elasticity of the excise tax was estimated at 1.16. In the 1983–1993 period, however, the estimated income elasticities for all the individual taxes, except the cocoa export duty, were more than unity, thereby causing the overall tax system to have an elasticity of 1.22. This represents an increase of 69.5% over the estimated income elasticity for the overall tax system in the 1970–1982 period.

A comparison of the estimated buoyancies and elasticities of the overall tax system and of the individual taxes in each period shows small differences. For the overall tax system, the differences were 1.6% in 1970–1982 and 5.8% in 1983–1993. For the individual taxes, the differences were all less than 10% in both periods, except for excise tax in 1970–1982 where the elasticity exceeded the buoyancy by 10.6%.

Some studies have attributed the differences between tax buoyancy and elasticity to the contribution of changes in the discretionary measures. In this study, the differences

Table 6: Estimated tax buoyancies and elasticities*

Tax category	Buoyancy	Elasticity	Difference (percentage)
Pre-tax reform period, 1970–1982			
Overall tax system	0.7197 (11.4325); $\bar{R}^2=0.89$; DW=1.83	0.7082 (10.7714); $\bar{R}^2=0.89$; DW=1.88	1.5979
Personal income tax	0.8879 (9.8821); $\bar{R}^2=0.91$; DW=1.95	0.8664 (9.1102); $\bar{R}^2=0.89$; DW=2.10	2.4214
Company tax	0.8095 (5.9854); $\bar{R}^2=0.84$; DW=1.85	0.8176 (5.9989); $\bar{R}^2=0.89$; DW=2.10	-1.0006
Sales tax ¹	0.6876 (3.9845); $\bar{R}^2=0.82$; DW=1.90	0.6801 (3.9324); $\bar{R}^2=0.79$; DW=1.93	1.0908
Excise tax	1.0497 (15.4403); $\bar{R}^2=0.95$; DW=2.10	1.1612 (17.3209); $\bar{R}^2=0.97$; DW=2.00	-10.6221
Import tax ²	0.6042 (11.6652); $\bar{R}^2=0.89$; DW=1.91	0.5853 (9.4518); $\bar{R}^2=0.87$; DW=1.91	3.1281
Cocoa export duty	-0.5010 (-2.4039); $\bar{R}^2=0.94$; DW=1.79	-0.5221 (-2.9675); $\bar{R}^2=0.98$; DW=1.91	4.2116
Tax reform period, 1983–1993			
Overall tax system	1.2948 (25.6601); $\bar{R}^2=0.93$; DW=1.99	1.2200 (25.0023); $\bar{R}^2=0.93$; DW=1.98	5.7764
Personal income tax	1.1939 (13.4427); $\bar{R}^2=0.95$; DW=2.00	1.0828 (13.9879); $\bar{R}^2=0.93$; DW=1.98	9.3063
Company tax	1.3564 (7.5155); $\bar{R}^2=0.95$; DW=1.91	1.3227 (7.5002); $\bar{R}^2=0.95$; DW=1.90	2.4866
Sales tax*	1.7089 (16.9875); $\bar{R}^2=0.96$; DW=2.10	1.5877 (14.5671); $\bar{R}^2=0.95$; DW=1.99	7.0936
Excise tax	0.9173 (8.2365); $\bar{R}^2=0.89$; DW=1.87	0.9941 (9.1007); $\bar{R}^2=0.90$; DW=1.92	-8.3724
Import tax**	1.3173 (17.7865); $\bar{R}^2=0.94$; DW=2.00	1.2072 (16.9987); $\bar{R}^2=0.94$; DW=1.99	8.3580
Cocoa export duty	0.8267 (4.9876); $\bar{R}^2=0.95$; DW=1.85	0.7498 (3.9987); $\bar{R}^2=0.93$; DW=1.91	9.3020
Percentage change in 1983–1993			
Overall tax system	79.9	69.5	
Personal income tax	34.5	25.0	
Company tax	67.6	61.8	
Sales tax ¹	148.5	133.4	
Excise tax	-12.6	-14.4	
Import tax ²	116.7	105.0	
Cocoa export duty	265.0	243.6	

* t-values in parentheses; ** On domestic manufactured goods; *** Includes import duty, sales and purchase tax on imported goods.

Table 7: Budget estimates of tax revenue and actual outcomes, 1970-1993

Year	Budget estimates (million of cedis)		Actual Outcomes (million of cedis)			Comparison			
	Total revenue	DTMS	Revenue (unadjusted)	Revenue (adjusted)	Difference (3-4)	2 as % of 1	5 as % of 3	3 as % of 1	5 as % of 2
	1	2	3	4	5	6	7	8	9
1970	437	62	388	336	52	14.2	13.4	88.8	83.9
1971	481	42	396	359	37	8.7	9.3	82.3	88.1
1972	459	28	357	331	26	6.1	7.3	77.8	92.9
1973	462	47	388	347	41	10.2	10.6	84.0	87.2
1974	640	113	557	467	90	17.6	16.1	87.0	79.6
1975	704	66	713	653	60	9.4	8.4	101.3	90.9
1976	940	102	965	874	91	10.8	9.4	102.7	89.2
1977	1057	41	1389	1349	40	3.9	2.9	131.4	97.6
1978	1437	22	2002	1980	22	1.5	1.1	139.3	100.0
1979	3025	460	2810	2424	386	15.2	13.7	92.9	83.9
1980	3639	373	2955	2630	325	10.2	11.0	81.2	87.1
1981	4087	509	4182	3734	448	12.4	10.7	102.3	88.0
1982	4380	89	3968	3881	87	2.0	2.2	90.6	97.8
1983	10117	3689	8434	6368	2066	36.5	24.5	83.4	56.0
1984	19527	6656	17830	13637	4193	34.1	23.5	91.3	62.9
1985	39900	13242	31841	20056	11785	33.2	37.0	79.8	89.0
1986	71281	23664	61587	42419	19168	33.2	31.0	86.4	81.0
1987	92494	14471	95400	82521	12879	15.6	13.5	103.1	89.0
1988	115853	12271	125779	114735	11044	10.6	8.8	108.6	90.0
1989	171219	27264	179139	155965	23174	15.9	12.9	104.6	85.0
1990	221201	25237	214254	192045	22209	11.4	10.4	96.9	99.0
1991	325713	66875	290529	239035	51494	20.5	17.7	89.2	77.0
1992	364263	44240	336096	297607	38489	12.1	11.4	92.3	87.0
1993	540608	122707	503395	406456	96939	22.7	19.3	93.1	79.0

Source: Government of Ghana, The Annual Estimates (various issues); Quarterly Digest of Statistics (various issues); ISSER (1994: 95)

must be interpreted with caution because they don't capture fully the effects of the discretionary tax changes. As the entries in Table 7 show, for both the 1970–1982 and 1983–1993 periods, the budget estimates of discretionary tax changes (column 2) differed substantially from the actual discretionary outcomes (column 5), even for periods such as 1975–1978, 1981 and 1987–1989, when the actual tax outcomes (unadjusted) exceeded the budget estimates. Also the share of the budget estimates of discretionary changes in total budget estimates (column 6) differed from the share of the actual discretionary changes in actual tax revenue (column 7). This underscores the fundamental weakness of the PA method employed to adjust the tax revenues for discretionary changes.

The fact is that individual tax systems, tax revenue, tax bases and GDP are all interrelated. Variations in an individual tax revenue can therefore be traced not only to variations in its own tax system through discretionary tax changes, but also to endogenous changes in its base. The base, in turn, is endogenously affected by changes in its own and other tax systems through the price mechanism, changes in investment, savings and income (Ehdaie, 1990). While the PA method may succeed in capturing the direct effect of the discretionary changes in statutory tax rates, the indirect and cross effects of such discretionary changes on its own tax system and on other tax systems and changes in the degree of tax evasion and administrative efficiency cannot be captured, thereby leaving the actual tax outcomes to be inadequately adjusted for the discretionary changes.

The revenue performance in 1970–1982 relative to the performance in 1983–1993 was low and lies at the heart of the estimated low buoyancies and elasticities during the period. As Table 8 shows, beginning from 1970 tax revenue declined steadily from 16.0% of GDP to 4.1% in 1982. Thereafter, the declining trend was not only reversed but assumed an increasing trend, reaching 9.2% of GDP in 1985 and averaging some 12% in 1986–1992. In 1993, tax revenue reached 18.0% of GDP, the highest level recorded since 1960. This development implied that whereas an increasing proportion of the incremental GDP was transferred to the government in the form of revenue in 1983–1993, a decreasing proportion of the incremental GDP was ceded to the government as tax revenue in the 1970–1982 period.

The low productivity of the tax revenue in the 1970–1982 period could be attributed to a number of factors. The first relates to the collapse of the country's foreign trade during the period. Tax revenue from international trade declined from 10.5% of GDP in 1970 to 0.9% in 1982, brought about mainly by the decline in cocoa production and export (the major foreign exchange earner at the time) and the resultant compression in imports. Cocoa production declined by about 55.6% between 1970 and 1983, so despite the government's increasingly high "tax" on cocoa exports implied by the low real producer prices, the overall tax revenue from cocoa exports declined. The reduction in imports, caused by the decline in exports reduced the tax base for import tax, leading to a decline in import tax revenue as well.

Apart from the reduction in both the export and import volume, the over-valuation of the cedi also contributed to the decline in real tax revenues in the 1970–1982 period. The exchange rate for the cedi was fixed at 1.15 cedis=US\$1 in February 1972; this remained in force until 1978, causing the cedi to become highly over-valued. Taking 1973 as a base year, for example, Christney (1985) estimated that by 1978 the cedi was over-

Table 8: Sources of government revenue, 1960-1993 (as percentage of GDP)

Year	Personal income tax	Company tax	Excise tax	Sales tax	Petroleum tax	Import tax	Export tax	Nontax revenue	Total revenue
1960	0.92	0.64	-	1.18	-	4.68	3.97	3.94	15.33
1961	1.21	0.90	-	1.08	-	5.73	3.13	3.67	15.72
1962	1.28	0.94	-	0.86	-	5.55	2.37	3.90	14.90
1963	0.98	0.73	-	1.12	-	5.64	2.50	4.27	15.24
1964	2.12	2.05	-	1.03	-	5.05	2.29	4.09	16.63
1965	2.01	1.91	-	1.36	-	7.33	1.40	6.08	20.09
1966	1.60	1.78	-	1.65	-	4.96	1.06	5.84	16.89
1967	1.47	1.97	-	1.30	-	4.42	2.35	5.97	17.48
1968	1.66	1.81	-	1.31	-	3.31	4.13	5.54	17.76
1969	1.29	1.78	1.28	1.56	-	2.98	4.95	2.75	16.59
1970	1.29	1.49	1.30	1.44	-	3.54	6.98	3.31	19.35
1971	1.13	1.30	1.20	1.32	-	4.29	4.82	3.95	18.01
1972	1.33	1.21	1.49	1.11	-	2.02	4.24	3.49	14.89
1973	1.17	1.29	1.56	1.05	-	2.04	2.71	2.85	12.67
1974	1.18	1.44	1.38	0.64	-	2.31	3.78	3.26	13.99
1975	1.58	1.97	3.42	0.80	-	1.84	3.55	2.27	15.34
1976	1.44	1.90	4.11	0.80	-	1.98	4.24	2.01	16.48
1977	1.43	1.26	2.17	0.50	-	2.00	4.40	1.99	13.75
1978	0.88	0.73	1.13	0.34	-	1.65	4.51	1.18	10.42
1979	1.09	0.90	1.65	0.32	-	1.27	3.93	1.52	10.68
1980	0.89	0.90	2.42	0.49	-	0.94	0.93	1.06	7.63
1981	0.93	0.85	2.09	0.90	-	0.83	0.01	0.64	6.25
1982	0.86	0.77	1.65	0.29	-	0.57	0.00	1.23	4.79
1983	0.48	0.41	0.83	0.35	-	0.76	1.59	1.15	5.57
1984	0.63	0.78	1.87	0.42	-	0.92	1.80	1.95	8.37
1985	0.89	1.33	2.10	0.81	-	1.40	2.67	2.56	11.76
1986	0.92	1.89	2.05	1.08	1.29	1.87	2.77	2.54	14.41
1987	1.09	1.93	1.72	1.77	0.74	1.71	3.62	2.32	14.90
1988	1.06	2.63	1.43	1.92	0.81	1.62	2.33	2.84	14.64
1989	0.89	2.30	1.34	2.39	1.06	2.29	2.20	2.66	15.13
1990	0.83	1.61	1.13	2.50	1.25	1.77	1.29	2.77	13.15
1991	0.70	1.51	1.02	2.04	2.83	1.77	1.23	4.08	15.18
1992	0.99	1.53	1.19	2.16	3.09	1.90	1.44	2.51	14.81
1993	1.63	1.98	1.47	3.25	5.36	2.91	1.36	5.70	23.66

Source: Brown (1972); GOG, Economic Survey (various issues); GOG, Quarterly Digest of Statistics (various issues); ISSER (1993).

valued by 250%, implying that exporters using the official channels were effectively taxed while importers received substantial premiums. In 1978, the cedi was devalued by 58%, but this did little to stem the appreciation of the real exchange rate so that by 1982 the exchange rate was overvalued by 816% (World Bank, 1984). This high over-valuation of the cedi caused incentives to shift from export to import trade and also encouraged black market and smuggling of export commodities to neighbouring countries. As imports became extremely cheaper, demand for them far outstripped the available foreign exchange, forcing the government to resort to import controls through a system of import licensing and administrative controls. In the end, only a very small volume of imports was possible. Meanwhile taxes were levied on the cedi value of imports and exports, but these values were not inflating with the rest of the economy so taxes based on them significantly eroded in real terms.

The reluctance of the authorities to adjust the exchange rate to its equilibrium level was accompanied by a system of price controls. In April 1982, the official price list, published in two volumes, contained 1,900 prices, with many items having separate control prices depending on size, make and quality. The consequence of the price control system was that demand for all goods exceeded supply. The incoherent attempts to enforce the price control policy, coupled with the over-valued exchange rate and absence of taxes and subsidies to reflect in prices the actual scarcity, caused a significant expansion of the black market economy (where transactions are non-taxable), forcing the structure of the formal markets in the economy to collapse. The impact of the price control system, the over-valuation of the exchange rate and the resultant black market economy was tragic. It deprived the government not only of large amounts of foreign exchange through official channels, but much needed revenue in the form of export duty, import tax and sales tax. It also affected the distribution of income in the society.

Finally, tax evasion, laxity in tax collection, and the significant time lag between tax assessment and tax collection in an environment of rapid inflation were also important factors explaining the decline in tax revenue in proportion to GDP in the pre-reform period.

The high productivity of tax revenue in the 1983–1993 could be attributed mainly to the effects of the exchange rate reform. Since the over-valued exchange rate had been the principal cause of the collapse of the country's international trade, and thus the bases of the traded goods taxes, the government introduced a major reform in this area, as we saw earlier. The exchange rate reform was supported by the introduction of foreign exchange auctions and foreign exchange bureaus (where foreign exchange could be freely bought and sold) as well as price and import liberalization, which effectively ended price controls and abolished the import licensing system. These developments worked to remove the restrictive mechanisms and market distortions existing in the economy, thereby restoring the tax bases that had been extensively eroded in the 1970–1982 period. The measures also signalled a shift of incentives to domestic production and export, which contributed significantly to the recovery in the export trade, particularly the export of gold, timber and many nontraditional goods. The devaluations also meant a larger local currency value of both exports and imports, thereby increasing the traded goods tax base. They also allowed the government to increase the producer price of cocoa, which

encouraged more cocoa exports (and a larger tax base), and to reinstate the cocoa export duty that had been abolished in the 1981–1982 period. In addition, the foreign exchange auctions together with the scrapping of the import licensing system contributed to the stimulation of imports, and thus the import tax revenue.

Apart from the exchange rate, trade and price liberalization, the increased flow of foreign loans and remittances from abroad also contributed to the increased flow of imports, and thus the base for import tax. The import recovery also allowed not only essential raw materials, capital goods and spare parts needed to improve the rate of capacity utilization, particularly in the manufacturing sector, but also stimulated domestic trading activities, thereby expanding domestic production and consumption and increasing the bases of both excise and sales taxes.

Finally, the better enforcement of the tax laws and pursuance of measures aimed at maximizing the efficiency of tax collection contributed significantly to the high tax revenue productivity in 1983–1993. In particular, the conversion of the two revenue institutions, IRS and CEPS, into autonomous organizations with improved employment conditions for their staff and freedom from the civil service bureaucracy, enabled the institutions to attract requisite professional staff needed to tackle the challenges of administration brought by the improved tax system. This had a positive impact on revenue mobilization, especially in the period after 1986.

Personal income tax

The estimated income tax buoyancy for the 1970–1982 period was 0.89 and the elasticity was 0.87. Compared with the corresponding coefficients of 1.19 and 1.08 for the 1983–1993 period (Table 6), one observes that the income tax performance was low in 1970–1982. Although personal income tax increased steadily from 1.3% of GDP in 1970 to 1.6% in 1975, it declined sharply thereafter, reaching under 0.5% of GDP in 1983 (Table 8).

The low productivity of personal income tax during the 1970–1982 period stemmed partly from the low taxation of non-wage income earners, especially income earners in the trading and commercial sector, but mainly from the decline of real wages of employees in the formal sector. The World Bank (1984) analysis of income tax collection according to sources for the period 1977/78–1979/80, for example, indicates that wages and salaries of employees in the formal sector accounted for 84% of the total income tax collection, while the self-employed and standard assesses contributed only 16%. Since in an environment of rapid inflation profits keep pace or move ahead of the price increases while wages and salaries lag behind, one would have expected that income tax from the self-employed workers, the majority of whom were in commerce and trade, should have risen relative to tax on wage income, but the use of official control prices in computing the profits and taxable income of the self-employed workers precluded their tax liability to inflate with the economy. The ease with which income tax on salaried workers is assessed and collected, i.e., based on the PAYE system, provided another explanation for the less concerted attention to taxes on self-employed incomes. Although the share of the self-employed income tax in the total income reached 58% in 1982/83, this was not due

to any improvement in tax collection from this source since the period witnessed a drastic decline in the share of tax on wage incomes.

The decline in wages and salaries of workers in the formal sector, resulting from the government's minimum wage legislation, was largely to blame for the low buoyancy and elasticity of income tax from 1970 to 1982. Governments in Ghana have implemented minimum wage legislation since 1960, when the wage rate was fixed at 0.65 cents per day. Since then, the rate has been revised upwards several times, but the policy not only failed to maintain the real wages of workers at subsistence levels, it also discriminated more against skilled personnel. Since 1974, increases in the nominal wages failed to keep pace with the rate of inflation. The result was that, in nominal terms, the average wage rate rose at an average of 28.4% in 1974–1983. In real terms, however, average wages actually declined at the rate of 13.3% per annum (Ewusi, 1987). Besides the compression of the wage structure, the differential between the highest and lowest paid in the civil service, where most wage and salary earners were employed, fell to 1.8:1 compared with the ratio of 10:1 in the private sector (Jonah, 1989). Given the severity of the situation, many skilled personnel left the civil service to work in neighbouring countries, where conditions were relatively better, or left their professions for trading, causing the base of employee income tax to shrink. The existence of a multitude of non-taxable allowances (leave, canteen, transport, housing, inducements, medical, education, clothing, etc.) was also an important factor underpinning the low buoyancy and elasticity in the period.

Compared with the estimated coefficients for the 1970–1982 period, the buoyancy and elasticity of personal income tax increased by 34.5% and 25%, respectively, in the 1983–1993 period, much less than the growth experienced in the overall tax system over the same period. The modest growth in personal income tax revenue in 1983–1993 was a reflection of the personal income tax policy of the period, which was generally directed at reducing the income tax burden. Starting from 1986, the income tax brackets were reduced from 16 to 5. In addition, the top marginal rate of 60%, which in 1985 applied to annual chargeable income exceeding 75,000 cedis, was successively reduced, reaching 35% in 1993 and applicable to annual taxable income exceeding 2,206,242 cedis in terms of 1985 value. These were in addition to the substantial tax reliefs granted to the low-income earners and married couples. For example, in 1985, the standard personal relief for a married couple was 6,500 cedis. By 1993 this had increased to 23,500 cedis in terms of 1985 value. Over the same period, the tax rates applied to the lower income earners were also revised downwards. Figure 2 compares the effective income tax rates in 1985 to the rates applied in 1993. As the figure shows, the income tax reform reduced the progressivity of the effective tax rates. Whereas in 1985, the effective tax rates ranged from 6% for incomes up to 25,000 cedis to 47% for incomes of 240,000 cedis and above, the corresponding effective tax rates in 1993 were from 0.1% to 9.4%, implying relatively lower real income tax liabilities in 1993. The decline in the effective tax rates was even more substantial for the higher income earners. For example, the effective tax rate paid by a married person with an annual income of 240,000 cedis was 47% in 1985. In 1993, a married person with an annual income equivalent to 240,000 cedis (at 1985 prices) paid an effective tax of less than 10%, representing a reduction of some 37 percentage points between the two periods. The effect of these reforms was that the share of income tax revenue in GDP increased by only 0.6 percentage points, from 0.5 in 1983 to 1.1 in 1988. Thereafter, the share declined to 0.7% in 1990 before rising to 1.6% in 1993 (Table 8).

Figure 2. Effective income tax rates, 1985 and 1993

Company income tax

The estimated company income tax buoyancy and elasticity for the 1970–1982 period were 0.81 and 0.82, respectively. In 1983–1993, the buoyancy and elasticity were estimated at 1.36 and 1.32, respectively, showing a vast improvement in the productivity of company income tax revenue in the period. For the buoyancy, the increase was 67.6% and for the elasticity it was 61.8% in 1983–1993 (Table 6). The recovery in the company tax revenue in 1983–1993 was reflected in its share in GDP. As a percentage of GDP, company tax revenue generally declined in the 1970–1982 period. As Table 8 shows, the share declined slightly from 1.5% of GDP in 1970 to 1.2% in 1972 and thereafter increased sharply to an average of 1.9% in 1975/76. After this period, the share declined sharply, reaching 0.4% of GDP in 1983. After 1983, however, the share increased steadily to 2.6% in 1988, dropped to 1.5% in 1991 and picked up again, reaching 2.0% in 1993.

The poor performance of company tax revenue in 1970–1982 reflected the sharp decline in industrial production, and thus the base of company tax, following the general decline of the economy over the period. Although Ghana's industrial capacity is relatively large, diverse and long-established compared with most other African countries, it has largely been underutilized. Excess capacity has therefore been a common feature of the sector, and the situation was exacerbated by the high investment activity in the 1974–

1976 period. The average rate of capacity utilization during the period 1970–1977 was in the range of 43%–52%. Capacity utilization worsened in the late 1970s and early 1980s as the country's ability to import raw materials and spare parts diminished. By 1982, the average capacity utilization had dropped to 21%, with the decline particularly acute in the textile subsector (World Bank, 1985). Correspondingly, manufacturing output remained stagnant between 1970 and 1977 after a dip in 1973/74, and then declined sharply in the 1977–1980 period. The sector's output is estimated to have declined by 8.3% in 1980/81, followed by a further decline of over 20% in 1981/82 (World Bank, 1985). Thus, far from being a leading sector generating economic growth, the manufacturing sector became a lagging sector with huge underutilized capacity.

The immediate cause of the precipitous decline in industrial production in the 1970–1982 period was the acute shortage of imported inputs, arising from the inability of the economy as a whole to generate sufficient foreign exchange and the high costs of manufacturing production, which prevented the sector from meeting its own foreign exchange needs through export earnings. The decline of the export sector during the period made the tight foreign exchange situation much worse. The difficulties in obtaining vital imported spare parts and raw materials forced manufacturers to restrict output. Industries based on domestic resources also found themselves in equally bad shape as a result of the strong policy bias against agricultural production.

Apart from the acute shortage of essential imported inputs, the price and distribution controls that characterized the period and tended to favour trade also discouraged industrial production. The price controls interfered extensively with the ability of producers to raise ex-factory prices to the level of the domestic market prices. In this way, the policy reduced the protection and profits of domestic industries to the extent that most reported manufacturing statistics often showed production costs that exceeded the value of sales. This development not only prevented manufacturers from sharing in the scarcity value of the goods they produced, it also adversely affected revenue mobilization from company tax, excise duty and sales taxes.

The high revenue performance of company tax in 1983–1993 stemmed from the modest recovery in industrial production, brought about through the availability of foreign exchange, which allowed an increased inflow of imported raw materials, spare parts and capital goods needed to maintain and replace the ageing capital stock. As a result, capacity utilization in large and medium manufacturing enterprises increased from 18% in 1984 to 41% in 1989 while industrial production grew at an annual average rate of 7.7% from 1984 to 1993 (GOG, 1992b). The abolition of price and distribution controls also contributed to the stimulation of industrial production as it allowed producers to “charge what the market could bear”, thereby ensuring a balance between sales revenue and production costs. It also removed delays and uncertainties in industrial activity and enhanced producers' ability to assure the banks of adequate cash flows (necessary to obtain credit).

Sales tax

Sales tax buoyancy was estimated at 0.69 and elasticity at 0.68 in 1970–1982. Comparing the corresponding coefficients of 1.71 and 1.59 in 1983–1993 (Table 6), one observes a tremendous increase in the productivity of sales tax revenue in the latter period. The estimated coefficients for the 1983–1993 period represent an increase of 148.5% for the buoyancy and 133.4% for the elasticity, making sales tax revenue the one that experienced the most improvement in 1983–1993. As a percentage of GDP, sales tax revenue declined steadily in the 1970–1982 period. Thereafter, the share in GDP increased sharply to 1.1% in 1986 and averaged 2.3% each year in 1987–1993. Indeed, the shares of sales tax revenue in GDP in each year of 1989–1993 were double the shares in each year in 1970–1982 (Table 8).

The poor performance of sales tax revenue in 1970–1982 was due in part to the decline in real private consumption expenditures, the base on which the tax is imposed, but more to the poor administration of the sales tax itself. Following the general decline of the economy, per capita real income declined by about 30% between 1970 and 1983 (World Bank, 1984). Accompanied by worsening income distribution and growing unemployment, the incidence of absolute poverty increased, which in turn caused a sharp decline in real private consumption expenditure and thus sales tax revenue. The use of controlled ex-factory prices as a basis for computing sales tax liability, particularly during the high inflation period of 1977–1982, also contributed to the erosion of the value of sales, the base on which the tax was imposed. To this one must also add tax evasion and laxity in tax collection, the two endemic tax problems that characterized the period.

The recovery in the growth of sales tax revenue in 1983–1993 was attributed to three main factors. First, there was a significant improvement in the tax collection brought about by the restructuring of the tax collection machinery and the whole tax administration. This was supported by the abolition of the price control system, which had created a wide divergence between the official ex-factory prices (the base at which sales taxes are assessed) and the market price (the base at which transaction takes place). Second, the conversion into sales tax of excise duties levied on all locally produced goods, except for tobacco and beverages, also contributed significantly to the high buoyancy of the sales tax revenue, particularly in the period after 1987. Third, the recovery of real GDP growth in 1984–1993 allowed for the first time in many years sustained gains in real private income per capita of about 2.8% a year. These gains permitted an expansion in real consumption expenditures, the base of sales tax, of about 2.5% each year during the period (Kapur et al., 1991).

Excise duty

The estimated buoyancy of 1.05 for excise tax in 1970–1982 was higher than the corresponding coefficient of 0.92 in 1983–1993. Similarly, the estimated elasticity of 1.16 for 1970–1982 was higher than the 0.99 elasticity estimated for the 1983–1993 period. These figures indicate a decline of 12.6% in the buoyancy and 14.4% percent in

the elasticity in 1983–1993 (Table 6). As a percentage of GDP, revenue from excise tax was the only one that experienced a decline in 1983–1993. The share of the excise tax revenue in GDP increased from 1.3% in 1970 to 1.7% in 1982, with a sharp jump in 1980 and 1981. In 1983, the share declined to 0.8% of GDP. Thereafter, excise tax revenue resumed growth, reaching 2.1% of GDP in 1986. After 1986, however, the share declined steadily, reaching 1.2% in 1992 (Table 8).

Throughout the 1970–1986 period, excise taxes were imposed on few manufactured products, thereby making the collection relatively easy and evasion relatively difficult. In addition, revenue from petroleum tax until 1986 was counted as part of excise tax revenue, thus causing the productivity of excise tax to increase as prices of petroleum products rose, especially in the late 1970s and early 1980s. The decline in the buoyancy and elasticity in the 1983–1993 period was attributed to the abolition of all excise duties on products other than beverages and tobacco in 1987 and the successive reduction in the duty rates of the affected goods. The conversion of the excise tax on petroleum to a de facto petroleum tax was also a factor accounting for the low productivity of excise tax revenue in the period.

Import tax

The impact of the tax reform measures was also seen in the performance of import tax revenue. The estimated import tax buoyancy and elasticity in 1970–1982 were both less than unity, 0.6 and 0.59, respectively. Compared with the corresponding coefficients of 1.32 and 1.21 estimated for the 1983–1993 period (Table 6), the productivity of the import tax revenue was low in 1970–1982. This poor performance could be attributed to 1) the compression of imports resulting from the acute foreign exchange shortages that characterized the period, 2) the valuation of imports at the artificially over-valued exchange rate, 3) the use of specific duty rates rather than ad valorem rates in computing duties payable, and 4) evasion and laxity in tax collection.

The high productivity of the import tax revenue in 1983–1993 was due to the success of the measures taken to address the import tax problems in the 1970–1982 period. First, the substantial inflow of foreign exchange, arising from the expansion in exports, increased foreign loans and remittances and the abolition of the import licensing system, allowed a complete recovery of imports. Second, the successive devaluations of the exchange rate contributed substantially to the restoration of the import tax base. Third, the replacement of all specific duty rates by the ad valorem duty rates together with the establishment of the uniform tariff rate for most imports (which greatly simplified the collection process) allowed more import tax to be collected. The increased tax collection was also supported by improvement in the tax administration.

Table 9 shows the impact of the changes in the import tax rates, exchange rate adjustments and changes in imports (valued in US dollars) on the share of import tax revenue in GDP. The entries in the table show that the major source of growth in the import tax revenue's share in GDP in 1970–1982 was imports valued in US dollars. In 11 out of the 13 years, imports contributed positively to the changes in import tax revenue/

Table 9: Decomposition of sources of change in import tax/GDP ratio (percentages)

YEAR	ER/P	ETR	MGS	1/GDP	TOTAL
1970	-32.4	34.2	132.3	-41.0	100.0
1971	-21.2	24.9	122.7	-26.4	100.0
1972	-14.9	20.7	97.5	-3.4	100.0
1973	-288.1	-188.6	657.3	-80.6	100.0
1974	-192.1	-125.7	471.5	-53.7	100.0
1975	114.6	8.9	35.4	-58.9	100.0
1976	-346.0	293.5	102.3	50.3	100.0
1977	-513.0	392.6	243.2	-22.8	100.0
1978	64.6	8.7	-15.5	42.2	100.0
1979	-42.4	154.3	3.2	-15.1	100.0
1980	134.9	34.8	-72.1	2.4	100.0
1981	463.9	-352.4	12.2	-23.6	100.0
1982	64.7	-54.9	108.3	-18.1	100.0
1983	124.5	-140.2	98.6	17.1	100.0
1984	591.8	-60.9	-384.9	-45.9	100.0
1985	54.3	-27.9	85.7	-12.0	100.0
1986	50.0	3.1	64.2	-17.3	100.0
1987	-232.5	371.6	-90.1	51.0	100.0
1988	25.5	-286.0	256.5	104.1	100.0
1989	11.3	97.7	5.2	-14.3	100.0
1990	54.1	101.7	-68.6	12.8	100.0
1991	166.5	-85.5	-127.3	146.3	100.0
1992	253.9	-243.9	146.3	-56.3	100.0
1993	89.7	-18.2	39.9	-11.3	100.0

* figures may not add up to exactly 100 due to rounding to one decimal point.

Methodology:

$$\begin{aligned}
 \text{Define } MT &= ETR \cdot ER \cdot MGS \\
 MT/(P \cdot GDP) &= (ETR \cdot ER \cdot MGS) / (P \cdot GDP) \\
 &= ETR \cdot ER/P \cdot MGS \cdot 1/GDP \\
 \Delta \log (MT/P \cdot GDP) &= \Delta \log ETR + \Delta \log (ER/P) + \Delta \log (MGS) + \Delta \log (1/GDP)
 \end{aligned}$$

where MT = import tax revenue; ETR = effective tax rate; ER = nominal exchange rate (cedis= US\$1); MGS = imports valued in US dollars; P = GDP deflator; GDP = gross domestic product (nominal).

GDP ratio. The average annual contribution was estimated at 146.5%. The contribution of the changes in the real exchange was negative during the period. As the table shows, the exchange rate over-valuation was the major source of deterioration in the import tax revenue performance in the period. The exchange rate adjustment, however, was the dominant factor explaining growth in the import tax revenue in 1983–1993. In 10 of those 11 years, adjustments in the exchange rate positively affected the import tax revenue, so that its contribution reached an annual average of 108.1%. The contribution of changes in the effective tax rates in 1983–1993 was largely negative, caused mainly by the lowering of the import duty rates on standard and luxury goods and the abolition of some special duty rates and duties on building materials in 1991. Although the change from specific to ad valorem duty rates in 1990 contributed to the growth of import tax revenue, its effect was largely offset by the lowering of the duty rates.

Cocoa export duty

The estimated buoyancy and elasticity of the cocoa export duty in 1970–1982 were all negative, -0.5 for buoyancy and -0.52 for elasticity. Although the estimated buoyancy and elasticity in 1983–1993 were positive, they were less than unity, 0.83 for buoyancy and 0.75 for elasticity (Table 6). The poor performance of the cocoa export duty in 1970–1982 could be explained in part by the decline in domestic production and exports and partly by the fall in world market prices. Cocoa production fell gradually from 409,000 metric tonnes in 1970 to 329,000 metric tonnes in 1977, then dropped sharply to a mere 179,000 metric tonnes in 1983. At the same time, the spot price of Ghana's cocoa in London markets increased from £381 in 1970 to £2,935 in 1977 and then dropped sharply, reaching £1,033 in 1982. As a result of both the decline in export volume and export prices, the share of cocoa export duty in GDP declined sharply, from 7% in 1970 to 0.9% in 1980, with some jump between 1976 and 1978. Since 1983, the cocoa export duty's share in GDP has gradually increased, reaching 3.6% in 1987 and averaging 1.6% in 1988–1993 (Table 8).

The decline in cocoa production and export in 1970–1982 was due in part to the ageing stock of cocoa trees, widespread diseases, bad weather and the shortage of farm labour and inputs, but mainly to the extremely low producer prices paid to farmers. Cocoa farmers received 37% of cocoa export receipts in 1970. The farmers' share subsequently increased to 44% in 1972/73, but dropped to 29% in 1974/75. Thereafter, the farmers' share ranged from 26% to 47%, except for 1981 and 1982 when world price declined and the cocoa export duty was abolished (Stryker, 1990). The low prices paid to cocoa farmers was due to three main factors. First, the over-valuation of the exchange rate throughout the 1970–1982 period made it difficult for the Ghana Cocoa Marketing Board (GCMB), which receives its revenues in foreign exchange from cocoa exports, to pay a high cedi price to the farmers. Second, the GCMB itself became inefficient, leading to increased “marketing costs” (payments to GCMB). Finally, the government steadily increased the (implicit) tax on cocoa exports by holding producer prices down (Younger, 1989).

The improvement in the cocoa export duty in 1983–1993 was the result of the rehabilitation and restructuring of the cocoa sector (with foreign aid) that commenced in 1983 and exchange rate reforms that allowed significant increases in producer prices. The improved price incentives and rehabilitation of cocoa farms led to the recovery in cocoa output and export, which reached 305,000 metric tonnes in 1993 (Economist Intelligence Unit, 1994), and to a gradual decline in exports to neighbouring countries through illegal channels.

VII. Mobilization of additional revenue

The tax reform measures introduced in the 1983–1993 period succeeded in improving revenue generation and enhancing efficiency of tax administration and the equity of the tax system. The tax administration has been greatly improved, the tax base broadened and the whole structure of taxation rationalized. The reforms also made the tax regime less distortionary and strengthened economic incentives, especially incentives to promote savings and investment. Despite these significant gains, government revenue as a proportion of GDP is still too low compared with the average obtained in the developing world, and even with the average for Africa. As the entries in Table 10 show, total government revenue (including grants) averaged 14.6% of GDP in 1986–1991, compared with the average of 24.4% for Africa and over 25% for developing countries. The comparative shares of tax revenue shown in the table imply that it is possible for a developing country to raise its tax revenue into the range of 11% to 25% of GDP, but that it is only the industrial countries that will be able to sustain tax revenue shares in excess of 30% of GDP. The 11.9% tax revenue's share in GDP for Ghana is at the lower level of the developing countries threshold, indicating that from a macroeconomic standpoint there is ample scope for further increases in tax revenue. The problem with Ghana's resource mobilization is that revenue as a percentage of GDP has fallen short of budgeted levels in each year since 1986. While revenue targets have been met in absolute terms, higher than expected inflation has led to higher nominal GDP and thus lower revenue-GDP ratios, suggesting the existence of room for further revenue expansion.

But what are the revenue enhancement options available to the country?

Value-added tax (VAT)

The major option available for raising additional revenue is the introduction of VAT to replace the existing sales tax. VAT is an attractive tax because it is a powerful source of revenue that does not significantly distort businesses' and consumers' decisions. The record of VAT in generating large amounts of revenue quickly and in comparatively painless fashion has earned it the reputation as a "money machine" (Gillis, 1990). By design, VAT improves compliance as the collection of the tax revenue through a paper trail (invoices) helps auditors to detect evasion. The non-distortionary (neutrality) properties of VAT are attributable to the provisions that effectively free investment goods. Some forms of intersectoral disparities are unavoidable, but they can be minimized through appropriate choice of exemptions and rate structure.

Table 10: International comparison of revenue profile, 1986-1991
(period average as percentage of GDP)

Region/country	Total revenue	Tax revenue	Non-tax revenue	Grants
Industrial countries	34.9	31.2	3.1	0.6
Developing countries	25.4	17.1	6.4	1.9
Africa	24.4	18.1	3.9	2.4
Asia	20.4	14.2	4.3	1.9 ^b
Europe ^a	34.6	24.8	9.1	0.7
Middle East	27.3	10.7	13.1	3.5
Western Hemisphere	20.4	16.4	3.0	1.0
Ghana	14.6	11.9	1.8	0.9

Source: Computed from IMF (1993).

^a excluding industrial countries.

^b excluding the Pacific Islands of Tonga, Vanuatu, Solomon Island and Papua New Guinea.

In the 1960s, only 9 countries in the world levied VAT; now more than 90 countries do so. Of the OECD countries, only USA and Australia do not use VAT. All the Latin American countries now have VAT, as do the ex-communist economies of Eastern Europe. In the developing world, VAT has become the consumption tax choice. For the majority of the countries for which data are available, revenue from VAT constitute some 20% of total revenue, while the share of VAT in GDP is higher than 3% (Tait, 1991; Gillis, 1990).

The Government of Ghana recognized the need for VAT in its 1993 budget and began preparations for its introduction. A bill introducing VAT was discussed and approved in Parliament in October 1994, but its implementation was deferred until March 1995. Initially fixed at 17.5%, the VAT was expected to double the 1994 sales tax revenue. Although sales tax showed the highest tax buoyancy in the 1983–1993 period, its structure poses serious problems for further reductions in tax rates and revenue expansion, stemming principally from the narrow base of the tax, as it is applied only to imports and locally manufactured goods. The exclusion of the distribution and services sectors does not make the tax comply fully with its description as a tax on all consumption expenditures. It also compromises its fairness to all income-earners. In addition, the sales tax's multiple rates compound the existing problem of compliance. Further, the sales tax regime makes the country's exports non-competitive since it does not permit recovery of indirect taxes paid by most exporters on their inputs. It is the need to remove these deficiencies (distortions) and to improve the indirect tax revenue and its administration that made the introduction of the VAT the critical option.

Another important reason for adopting VAT in Ghana is related to the country's desire for accelerated economic growth. The VAT will allow the country to rely less on income-based taxation, which tends to discriminate against saving and investment, in favour of current consumption. Furthermore, the export-development strategy would be facilitated by the VAT, which does not tax exports and provides tax refunds for the inputs embodied in export production. Moreover, the broadly based VAT would enhance the stability of

revenue and reduce the volatility associated with some of the commodity-based revenue such as cocoa and petroleum taxes.

A major problem that is likely to confront the administration and implementation of the VAT system in the country is the poor culture of record keeping. The concept of VAT calculation involves the keeping of records of so many factors that help in determining the charge to tax, qualification for exemptions, zero rating refunds, etc. Most commercial business houses are owned by illiterates who hardly keep proper records of their business transactions. There are also many dishonest business people who would want to falsify their records to beat the tax administrators for personal aggrandizement (Kassim, 1994). The artificial price increases that may occur as a result of the acts of some greedy business people is also an issue to confront under a VAT system in Ghana. Besides, the public, especially the business sector, will need to be well informed and properly educated on the need for VAT, pros and cons, the items for exemption, and all that VAT is about, through seminars, workshops, and television and radio communications.

The government recognized some of the potential problems that VAT introduction will bring but did nothing about it. What the government did was to entrench in the VAT Act severe penalties for false declarations, falsifications, illegal alteration of VAT invoices and evasion. For example, the Commissioner for VAT was granted the authority under part IV of the Act to impose penalties not exceeding three times the amount of VAT not paid or falsified in addition to a forfeiture of any goods involved or to seek through the courts an imprisonment term of not exceeding two years, or both, for offenders. On the question of public debate, consultation and education on VAT, nothing was done in the country. The discussions on VAT were limited to members of the Parliament. It was therefore not surprising that the VAT introduction created uncertainties and suspicion in the minds of the general public, leading to violent public protest and eventual withdrawal of the tax for reconsideration. The public concern was not so much about the introduction of VAT as a new tax system, but more with the lack of public consultation and discussion, the timing of its introduction, and the initial high rate of 17.5%. All these point to the fact that tax policy and tax laws must conform to the society's commitment to the rule of law. This means not only that the system should be effective in the enforcement of tax laws, but also the citizens' right to be taxed should be protected. In other words, taxation must be founded on a moral consensus around the need to nurture the tax system as a vital component of national existence and in the valued ownership of all people in the country.

Property tax

Local governments in Ghana have traditionally depended on central government grants to cover most of their expenditures, which have constrained their ability to provide and maintain local infrastructures. As part of the central government's fiscal adjustment, many local government grants have been reduced, and the local governments are becoming increasingly dependent on locally generated revenue sources. Of the many locally raised revenue sources, property tax is the most important and effective. Unfortunately, this is one area that the tax reform process never touched. In fact, there had been no general revaluations between 1960 and the late 1980s, when the property tax was based on

construction costs and its administration taken over by the central government. Although a well established rating system had operated in the main urban centres of the country for some time, by the mid 1980s the tax base in Accra, for example, was well out of date. The last revaluation was done in 1960. Inflation since then had been high and almost half of the properties were missing from the valuation roll (Keith, 1993). As a result, supplementary valuations of new properties have failed to keep pace with growth, causing the share of property tax revenue in total revenue to become increasingly insignificant.

The reason for the neglect of property tax in Ghana, and indeed throughout the world, is that it is a politically sensitive issue. The sensitivity stems from the fact that the tax is very visible, effective and difficult to avoid. Besides, annual action is required to keep the tax buoyant. The visibility of the tax and the effect of gearing, i.e., that a small increase in a local government budget can trigger a big increase in the property tax rate, magnify the political difficulties.

Since property tax will for some time remain an important source of local government revenue, action is needed in this area. More recently, a twinning arrangement between the Ghana Valuation Division and the UK Valuation Office has enabled a full revaluation of all properties in Accra to be accomplished. The exercise led to an increase in the number of properties under valuation from 46,000 to 250,000, thereby increasing the tax base 800-fold (Keith, 1993). Similar efforts are being undertaken in four other cities. This exercise needs to be extended to all the urban areas to ensure a full exploitation of this potential local government revenue source.

Income tax

With respect to personal income tax, the satisfaction or compliance with the equity principle implies that the tax base should necessarily and sufficiently include all sources of income. Moreover, the rate of taxation should change according to different levels of income rather than income sources. While tremendous successes have been achieved in adjustments in the effective income tax rates (effective tax rates have declined for all income groups), the equity principle appears to have faltered. The income concept primarily adopted in the country is monetary income. Thus conceptually and operationally, non-monetized incomes are not reckoned as taxable incomes and are therefore not brought under the tax net. Personal income taxes are levied on only earned incomes, while a greater percentage of people in the subsistence and informal sectors who do not monetize their incomes are not covered. Similarly, most of the people whose incomes are monetized have other incomes in kind – petrol coupons, free accommodation, free medical care, etc. Investigations revealed that private medical practitioners and lawyers whose incomes are for all practical purposes higher than most employees in the formal establishments pay lower taxes. A comparison of their life styles with the taxes they pay shows that these groups under-declare their incomes either by deliberately doing so or because the incomes are not monetized.

The present conceptualization of income in the country coupled with the poor accounting records in the formal sector suggest that if nothing is done the fiscal authorities

are for a long time going to negate other facets of taxation and concentrate on revenue generation through indirect taxation. Clearly, this would not permit a maximum mobilization of revenue from the existing tax handles. The solution is for the definition of income for the purposes of income tax policy to be reviewed. This exercise would enable the tax authorities to extend the tax net to cover incomes earned in the private sector and other informal activities besides the incomes generated in the formal government sector. In the meantime, the standard assessment tax systems as applied to artisans and the Ghana Road Transport Union are policy steps in the right direction. To make it more efficient and equitable the Ministry of Finance and Economic Planning must consider undertaking a further study of the incomes of these and other groups so as to be able to develop commensurate tax schedules that would not defeat equity and incentive principles. The need to extend this tax system to encompass the millions of individuals, particularly those in the trading business, and smaller enterprises whose engagement in the formal sector is vital for revenue growth should also be considered. This could be facilitated by simple rules and procedures, and a minimum of fiscal complexity.

With respect to company tax, the ability to generate maximum revenue from this source depends on the complete recovery of the industrial sector, which in itself depends on the speed and strength of the private sector's response to the macroeconomic reforms. To date, the private sector's response appears to be not fully satisfactory, reflecting the initial poor state of the economy and the time needed to rebuild confidence in the sustainability of the new policy measures and in the outlook of the economy as a whole. The protracted economic decline from 1970 to 1982 left the private sector in a state of virtual devastation, from which it will require a length of time to recover. In particular, the dearth of medium-term financing, the rudimentary state of the capital market and the general weaknesses in financial intermediation make it difficult for companies to find means of financing other than short-term bank credit. The generally low profitability of many private firms and the low overall domestic savings also limit the prospects for self-financing (Kapur *et al.*, 1991). The policy measures introduced, especially after 1990, should contribute to the alleviation of many of the problems facing the private sector, and thus attract more private investment. In particular, these include the reduction in the tax on capital and investment income, including lowering the company tax rate from 45% to 35% in 1993, and reforms in the capital gains tax. Together with the extension of the capital allowances provided under the investment code to all manufacturing enterprises and the establishment of the stock exchange and divestiture of state enterprises, these constitute a major reform that should attract positive investment response.

Tax administration

Despite the many changes that the tax reforms have brought about, some problems of institutional infrastructure of tax administration still exist. First, the audit capacity of the tax authorities calls for serious improvement. An extensive audit of enterprises in both

the formal and informal sectors of the economy to provide comprehensive information relating to potential taxpayers and their sources and levels of income has never been done. Clearly, this has serious implications for tax revenue mobilization, as the administration is unable to provide indicators of critical inputs to estimate taxable bases. For example, in 1987–1989, tax revenue out-turns consistently exceeded the original estimates. The experience of 1986 also stands out vividly in terms of both revenue and expenditure estimates. The *ex ante* revenue estimate amounted to 85 billion cedis against an estimated expenditure of 90 billion cedis, producing a deficit of 5 billion cedis. And yet the budgetary out-turns produced a surplus. To increase the capacity of the tax administration and enhance human resources development, the current initiative to introduce computerization is an exercise in the right direction. The examination of taxpayer records needs to be stepped up with a view to establishing accurate tax liability. The Internal Revenue Service would have to take concrete steps towards reviewing the operations of identifiable bodies, who in the past have considered the periodic tax payments based on standard assessment as final tax.

With the present inflationary pressures, tax deferment and/or evasion must be checked. These practices benefit the violator or tax dodger. In the case of outright evasion, the budgetary authorities lose massively, whereas in the case of deferment, the taxpayer enjoys benefits equivalent to the prevailing nominal rate of interest on personal loans. Thus the gains from tax deferment become costs to the government budget. They also breed inequality among taxpayers with different possibilities of deferment. To prevent these tax malpractices, the tax authorities would need to fight with an efficient and honest tax administrative capacity as well as strong sanctions to deal with tax defaults, deferment and evasion. Tax penalties would have to be high enough to cover costs and ensure equity. At the same time the legal capacities to enforce compliance would need to be expanded and strengthened. A new penal law designed to reduce the burden of evidence required before the tax authorities can proceed with penalties needs to be introduced to strengthen the hand of the authorities in prosecuting tax evasion and tax fraud. This legal modification must allow for more flexibility in the application of fiscal secrecy, however, while permitting the tax authorities to publish (if need be) the list of defaulting taxpayers. Generally, the tax administrators need to improve their own managerial capacities through actions in the areas of collection management, audits and internal control, and personnel policy.

Tax policy

A major issue of concern with the taxation system in Ghana is that the specific objectives of tax policy are not always clear. It is usually difficult to make out whether the tax policies are designed to mobilize additional revenue or to afford the fiscal authorities the opportunity to realize a broader set of socio economic objectives, e.g., income redistribution, incentive to industrial development, stabilization of prices, redressing of external disequilibrium, and prohibition of the consumption of certain goods and services. Indirect taxes, for example, have been the major source of revenue and to compensate

for the revenue loss from income and property taxes, they have used extensively. But a tax policy that aims at mobilizing revenue from indirect sources should recognize the elasticities involved. A tax policy that aims at eschewing imports must realize that it cannot generate revenue at the same time. In fact, the introduction of the “super sales tax” on selected imports in the 1990 budget and many of the tax incentives granted under the 1985 Investment Code smack of this inconsistency. The point is that tax policy is multifaceted and the various facets may not be compatible in orientation. It is therefore very important for the tax authorities to make clear the objectives of their tax policies so as to be able to introduce fiscal instruments that are consistent with the objectives.

VIII. Conclusion

The rapid expansion of government expenditures amid low revenue growth in the period leading to 1983 led to serious fiscal imbalances in the Ghanaian economy. This development created the need for a larger share of the private sector's resources to be ceded to the government as taxes to finance the increased expenditures. Since 1983, therefore, the tax system of Ghana has undergone a fundamental reform, aimed at improving revenue generation and maximizing the efficiency of collection. Tax reform has thus been used as an instrument for raising the revenue productivity of the tax system.

Estimates of buoyancies and income elasticities of individual taxes and the overall tax system, based on empirical evidence, show that the tax reform process contributed greatly to the growth of revenue productivity from 1983 to 1993. This is evident in the elasticities of more than unity for the major taxes and of the total tax system. In addition, the overall tax system and all the major taxes, except excise tax and cocoa export duty, showed buoyancies of more than unity. The estimated buoyancies of the overall tax system, income tax, sales tax and import tax were all greater than their respective elasticities, showing the positive role that the reform has played in the revenue productivity growth. In particular, the successive devaluations supported by the abolition of price control and import licensing systems permitted a recovery in international trade and thus the bases of import tax and export duties. The measures also allowed an increased inflow of much needed imported inputs to rehabilitate the devastated industrial sector and improve capacity utilization. The resultant increases in industrial production led to increases in industrial income and thus company and sales tax revenues. Finally, the simplification of the import tariff rates and the complete overhaul of the whole tax administration also allowed more taxes to be collected, thereby contributing to the productivity of the tax system.

The empirical results have important implications for the Ghanaian fiscal system. They show that a tax system that is responsive to economic growth is desirable since it enables tax revenue to grow automatically without resorting to the politically difficult task of raising tax rates. In this regard, emphasis must be placed on those taxes that have high revenue elasticities. In the Ghanaian case, all the individual taxes investigated for the 1983–1993 period had relatively high elasticities, except for personal income tax which had elasticity of just above unity. The policy implication here is that the authorities must gradually move away from income-based taxation, which discriminates against saving and investment, in favour of the consumption-based taxes. Already the country is well underway toward liberalizing and reducing the tax burden on income. This policy must be pursued relentlessly.

Comparing the revenue performance over the review period with that of other countries in Africa and elsewhere, however, the study found that Ghana lies at the bottom threshold of the performance range for the developing countries, suggesting the existence of room for further revenue expansion. Various revenue enhancement options, including introducing VAT to replace the existing sales tax, revaluing properties to broaden the base of property tax, reviewing the definition of income for the purposes of income tax, and further improving the tax administration to improve tax collections and combat evasion and fraud, were found to be available for use by the tax authorities. Above all, the authorities must recognize that tax policy and tax laws must conform to the society's commitment to the rule of law. That is, the system must not only ensure an effective and equitable enforcement of tax laws but also that the citizens' right to be taxed should be protected both in the design of the tax policy and tax laws and in their implementation. In other words, taxation must be founded on a wide and transparent consultation. It must be built on a moral consensus around the need to nurture the tax system as a vital component of the national existence as well as the valued ownership of all citizens of the country. There must be room in a democratic society for a healthy debate on tax measures, although the tax system cannot be seen as a forum for protest against other perceived wrongs.

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